EXHIBIT 24

IN THE UNITED STATES BANKRUPTCY COURT
FOR THE DISTRICT OF DELAWARE

IN RE: NO. 01-01139 JKF

W.R. GRACE & CO., et al.,
Debtors.

CONDENSED TRANSCRIPT

VIDEOTAPE
DEPOSITION OF: THOMAS E. HAMILTON

DATE: February 25, 2003

TIME: 10:35 a.m.

LOCATION: Richardson, Patrick, Westbrook & Brickman, LLC
1037 Chuck Dawley Boulevard
Building A
Mount Pleasant, SC

TAKEN BY: Counsel for the Claimant

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ATTORNEYS FOR THE RESPONDENT:

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ALSO PRESENT:

David Roberts, Videotape Specialist

(INDEX AT REAR OF TRANSCRIPT).

(Plaintiff's Exhibits Hamilton 1 through 24 marked for identification.)

THE VIDEOTAPE SPECIALIST: We're now on the record. Today's date is February 2, 2003. The time is approximately 10:37 a.m. This is the videotape deposition of Thomas Edgar Hamilton being held at 1037 Chuck Dawley Boulevard, Building A, Mount Pleasant, South Carolina, at the law offices of Richardson, Patrick, Westbrook & Brickman.

Counsel, please introduce yourselves for the record.

MR. TURKEWITZ: My name is Rob Turkewitz and I'm an attorney with the Richardson, Patrick, Westbrook & Brickman firm and I'm representing the interests of the homeowners in the Zonolite Attic Insulation Science Trial in the W.R. Grace bankruptcy case.

MR. WESTBROOK: Ed Westbrook, Richardson Patrick, also for the homeowners.

MR. RESTIVO: Jim Restivo, Reed Smith, I'm representing W.R. Grace & Company.

THOMAS E. HAMILTON

being first duly sworn, testified as follows:

EXAMINATION

BY MR. TURKEWITZ:

Q. Good morning, sir.

Would you please state your full name for the record.

A. My name is Thomas E. Hamilton.

Q. And where do you live?

A. I live in Mansfield, Massachusetts.

Q. And what do you do for a living?

A. I'm the owner of a consulting health and safety business.

Q. And did you at one time work for W.R. Grace?

A. Yes, I did.

Q. When did you work for W.R. Grace?

A. I worked for W.R. Grace between August of 1971 until January of 1987.

Q. Let me just ask you a little bit more about your background.

Would you please list your educational background.

A. Yes. I have a degree in metallurgic engineering from Michigan Tech University which I received in 1970 and I attended Northeastern University part time in the M.B.A. program for four years. I did not complete the degree, but I did -- I got about half of it done.

Q. And do you have any postgraduate training?

A. I have postgraduate training through professional development courses that I've taken at NIOSH, which is the National Institute of Occupational Safety and Health at Wayne State University in toxicology, in industrial hygiene from Colorado State University, and I took several professional development courses which were offered through the American Industrial Hygiene Association which pertained to industrial health.

Q. And do you hold any certifications?

A. Yes. I have a certification from the American Board of Industrial Hygiene as a certified industrial hygienist.

Q. What does that involve?

A. To become a certified industrial hygienist requires experience and training in a scientific field and in more than 50% of your time working for at least five years as an industrial hygienist. It also requires -- at the time that I became certified it required the completion of a core examination and a comprehensive examination, which totaled 16 hours of exams, and I passed successfully in 1980.

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Q. And when did you become certified as an industrial hygienist?
A. My certification was granted to me in, I believe, December of 1980.
Q. And did you become a certified industrial hygienist while at W.R. Grace?
A. That is correct.
Q. I would like to talk to you a little bit about your employment with W.R. Grace.
What was your first position at W.R. Grace?
A. In August of 1971 I joined W.R. Grace as a systems engineer working for the Letter Flex Systems in the Polyfibron Division which was located at that time at the research center in Clarksville, Maryland.
Q. And were you promoted or reassigned to another position at any time?
A. Yes. Within that job I worked for Letter Flex Systems for three years from '71 to '74, and I was promoted to the engineering group in my last year, which would have been in 1974 through -- 1973 - '74 as a manufacturing engineer, and it was in the summer of '74 that I interviewed for a job in the Health and Safety Department in

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Cambridge and was offered that job and I took it. That was a promotion, and I worked in the Health and Safety Department until the end of my career at Grace in 1987.
Q. When you first arrived at the Health and Safety Department, what was your position?
A. I believe my business card at the time said safety engineer.
Q. And who did you report to?
A. I reported to Harry Eschenbach.
Q. While you were in the Health and Safety Department until you left W.R. Grace did your position change?
A. Yes. I believe it was in 1978 after I had passed the comp. exam for certification as a hygienist I was promoted to manager of industrial hygiene.
Q. And did you continue as manager of industrial hygiene until you left Grace in 1987?
A. Yes.
Q. Can you describe W.R. Grace's Health and Safety Department.
A. Yes.
When I first joined the Health and Safety Department there was -- there were two

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people working there. I was the third person. Harry Eschenbach was essentially doing the industrial hygiene work and was the de facto manager. Peter Kostic was the manager, the safety manager, at the time and he managed the Safety Department side of the Health and Safety.
In around 1979 - '80 we brought on a part-time person, Dr. Borgsted, who helped us with our medical issues; helped me set up a medical program and a monitoring program especially within Construction Products Division, but we did work within other divisions with Dr. Borgsted. And in 1980 we hired an industrial hygienist, Paul Conner, who worked for me. He reported to me. And in -- I believe it was 1982 -- I'm not quite sure of the date, '82 - '83. -- Dr. Borgsted had left and we brought on Dr. Berke as our medical director.
So Peter Kostic had left the company, had retired, and we had replaced him with a Robert Marion who was the new safety director. So essentially in 1987 we had five professionals and two-secretary staff.
Q. So you started out in 1974 with three individuals in your Health and Safety Department, in Grace's Health and Safety Department, and then

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it went to five when you left.
Was that five?
A. Yes, although I think we might have hired another safety person. Right at the time I left in '87 they were hiring another safety person to work for Bob Marion. So it might have been six people at the end, but it was right when I was leaving.
Q. And what divisions within Grace was the Health and Safety Department responsible for?
A. Yes. I think it's important to understand the relationship there.
We essentially worked for Industrial Chemicals Group and the Health and Safety Department based in Cambridge serviced four of the divisions of ICG, and those were the four Lexington - Cambridge based divisions.
As time went on the role that we had within ICG expanded to include other divisions such as Krivax and Davison Divisions. So near -- by 1987 we were servicing most of ICG, at least six of the divisions at ICG that we worked with in terms of health, safety and toxicology and environmental issues also.
Q. In 1974 what division were you actually

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servicing at that point?
A. Well, there was the Cambridge Construction Products Division and then there was organic chemicals and polyfibron, which were mainly located in Lexington.
Q. And approximately how many people in these various divisions did the Health and Safety Department service?
A. That's a tough answer because the size of the company was changing quite a bit and keeping a census was difficult, but I would say probably by 1987 — no. In 1974 there probably were somewhere between 5 and 8 thousand employees in the four divisions, but I may be off on that. I'm not quite sure. It's been too long.
Q. How about in 1987 when you left? You had five individuals in your department.
A. Yes. There were at least five, pushing towards six, although when I left it went back down to five. The six divisions probably had somewhere around 25,000 employees.
Q. Did there come a time when your work at Grace involved asbestos?
A. Yes. When I joined the Health and Safety Department, the very first day I worked

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there my boss, Harry Eschenbach, started talking to me about the asbestos issues within the Construction Products Division.
Q. And did there come a time where you first became aware that asbestos exposure was capable of causing disease?
MR. RESTIVO: Object to the form.
A. I think that our initial discussions talked about the fact that asbestos was capable of causing a lung disease none as asbestosis, which was a restrictive lung disease.
I should note that earlier you asked me if I was certified in anything, and one of the certifications that I attained while working at Grace in about 1981 -- I believe in that time period -- was certification as a pulmonary technologist, and I became certified to actually conduct lung function tests on employees, because we were doing lung function testing in all of the expanding plants in Libby, Montana, at the Libby warehouse, plus South Carolina, the vermiculite operations there. So there was another certification that I had.
The awareness that we had of asbestos and the fact that asbestos could cause a

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restrictive lung disease known as asbestosis was something that I became aware of immediately when we began our discussions of the fact that there was asbestos in the Libby operations and that this was a major reason why I was hired, was to help with the monitoring and evaluation of that problem, plus I think the department was looking for an engineer — and that's my background — was to have an engineer on the Health and Safety staff to look at engineering controls and methods for reducing exposures to chemicals, and part of that would be exposures to asbestos in the expanding plants.
Q. And did you become aware that asbestos was capable of causing other diseases as well?
MR. RESTIVO: Object to the form.
A. Yes. As we became more knowledgable and read more — as I became more knowledgeable and was obtaining more information about asbestos, there was a clear relationship that was published in the literature in regard to the synergistic effect of smoking and being exposed to asbestos; that there was a clear relationship that people who were exposed just to asbestos generally did not develop lung cancers at the same rate that people who smoked and were exposed to asbestos got and

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that the rate was about ten times higher of an opportunity to develop a cancer from the synergistic effect of smoking and being exposed.
So this information during -- until about 1974 right through the end of my career there we were constantly looking at information, and it became immediately in 1974. Within the very first week of working in the Health and Safety Department it was clear that that was going to be a major focus of my work.
Q. And did you come to learn that exposure to asbestos was capable of causing a disease called mesothelioma?
MR. RESTIVO: Object to the form.
A. Yes.
Mesothelioma is a very unique form of cancer, and it really describes a type of cancer which was associated with asbestos exposure.
Generally if you develop mesothelioma they look for asbestos exposure in your background, and this was something that we talked about and were very aware of in studying the literature at that time. Throughout the '70s it was very clear that there was a relationship there.
Q. Did you come to learn that the

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vermiculite manufactured – or that vermiculite from Libby was contaminated with asbestos?
MR. RESTIVO: Object to the form.
A. Yes. That was something I learned within the first five days of my employment at the Health and Safety Department, was an explanation of the issues of the Libby vermiculite versus South Carolina vermiculite and the fact that the – I think it was explained to me this way one day at lunch. One of the managers from CPD explained that the vermiculite mined in Libby was actually an asbestos mine that was contaminated with vermiculite, was the way it was described to me; that there was more asbestos there than there was vermiculite, but the concentrating process was to extract the vermiculite out of that.
Q. And did you also come to learn that the asbestos at Libby was an amphibole form of asbestos?
MR. RESTIVO: Object to the form.
A. Yes. And part of my training in terms of the OSHA standard and the awareness that I was required to have with regard to health issues with asbestos, the understanding of the types of asbestos, the forms that it takes, the difference

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between a serpentine and an amphibole was very clear; that we had to understand that, and we understood that in the Health and Safety Department.
I was informed of and had training on the fact that the form of asbestos which occurred at the Libby operations was an amphibole, which has the characteristics of a needle shape, and the other types of asbestos that had been used in the Construction Products Division, which was an additive to some of the products like monocote and to dehydratine and some other products within the Construction Products was a serpentine form of asbestos, which is sometimes pronounced Chrysotile or Chrysotile, depending on the tomato/tomato thing. Some people call it Chrysotile. And that's the way it was explained to me. But that is a serpentine, which looks more like a snake or a hair curling, but it's actually not as brittle. It is capable of bending, whereas the amphiboles don't bend very easily. They tend to snap and break.
Q. And can you tell us whether or not it was understood at Grace that the Libby expanded vermiculite was friable?
A. Yes.

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First you have to understand what the word "friable" means, and that means you're capable of crushing it with hand pressure. And that was explained to me, the fact that not only was the vermiculite friable, but the tremolitic content was also friable.
Q. How friable was the tremolite in the material?
A. The tremolite that occurred that you could actually pick the shards out of the Libby vermiculite -- if you actually picked up a piece of the tremolite, you could crush it in your hand with very little effort. I mean, it wasn't difficult to actually crush that in your hands.
Q. Now, when we're referring to "tremolite", we're referring to tremolite asbestos?
A. Yes.
Q. That's the tremolite amphibole form of asbestos?
A. Correct.
Q. And when you worked in the Health and Safety Department, was it understood by you and others at Grace that respirable asbestos fibers are microscopic in size?
A. Well, the term "respirable" as we used

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that term -- to answer your question directly, yes, we understood that, but it's important to understand what respirable means.
For the term "respirable", which we use as an industrial hygienist, we're talking about a fiber or a particulate that is capable of penetrating to the deepest parts of the lung. Some particles are inhaleable, some particles stop with the thoracic area, and some particles can actually penetrate deeply into the lung. Those are respirable particles.
Q. Are these respirable particles visible to the naked eye?
A. No. They're well below visible range. You're not capable of seeing these with the naked eye.
Q. And was it understood by you and others at Grace that because of the microscopic size of the asbestos fibers, you could have very large numbers of asbestos fibers in a product and the asbestos content would barely be detectable by weight?
MR. RESTIVO: Object to the form.
A. This was well understood by everybody that if you were to look at the expanded

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vermiculite under a microscope you would see fibers – at 450X you would be capable of seeing fibers on the product, coating a product, but to the naked eye these were not visible.

Q. Was it understood by you and others at Grace that asbestos fibers could remain airborne for very long periods of time?

MR. RESTIVO: Object to the form of the question.

A. Yes. I think that was pretty much understood by all of us, that once you had an airborne fiber event, that the fibers will stay suspended in the air for a very long time. They were not affected by gravity as much as we might have thought. They did not settle out. They tended to float in the air following wherever the air was moving. And the problem was you could have very, very high fiber levels, literally millions of fibers per cubic meter of air, and you would see nothing in the air at all. It would not be visible.

Q. And do those asbestos fibers eventually settle out?

A. I suspect that if it was in a room and you were to look at some setting velocity on these

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that you could potentially get all of the fibers to settle over some period of time. I don't have the slightest idea how long that is, but I know it is not measured in hours. It would be measured more in days.

Q. And talking about asbestos on surfaces, can asbestos on surfaces be reentrained into the air?

MR. RESTIVO: Object to the form of the question.

A. Because a settled particle is so light in weight, it does not require much air movement or scrubbing to reentrain a settled particle.

Yes; it would go airborne immediately if it had the opportunity to do that.

Q. And was reentrainment of asbestos a concern for you and others at Grace?

A. It's an interesting question.

I think reentrainment was an issue, although it wasn't talked about very much. I mean, we didn't really talk about reentrainment. We were more concerned about primary. Our occupational exposures were primary exposures, not reentrainment. So I think we were so focused on primary exposure in trying to get the levels of

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exposure within acceptable or government regulatory standards that we didn't really focus on reentrainment, although I will say this: We knew that reentrainment was a major problem in our expander plants. That's why we had tremendous programs for cleaning.

When there was a plant audit, a fiber audit, an occupational exposure audit, planned for an expanded plant, they were would spend upwards of four to five days cleaning the plant, and a lot of this dealt with settled dust that they wanted to vacuum up and clean because of the reentrainment issue. Although we never talked about it as reentrainment, that essentially was what it was. I mean, if you have dust on the floor, you've got to vacuum that up before you do your audit or you're going to have a high fiber count.

Q. And why would you have a high fiber count? Would it be from the dust getting disturbed?

A. Yes. It would be from dust that had settled and then been redistributed just through activities in the plant.

Q. Well, did W.R. Grace ever implement any precautions to avoid exposure to asbestos from

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asbestos-settled dust?

A. Yes. I think there were – I think that would be a fair statement to say yes, that we did that. I can give some examples.

For example, we banned the use of brooms in the expander plants, and the reason is that once you have settled dust, you don't want to sweep it with a broom.

When brooms were found in plants, that was a big deal. That would go down in the report that there were brooms there, and we would tell the plant managers and the manufacturing managers about the fact that we're finding brooms again. That would be an issue of settled dust. Also, to replace a broom we put in vacuum cleaners and vacuum systems, which were HEPA or high efficiency particulate arresting vacuum cleaners, so that during the vacuuming you wouldn't reentrain the dust you were picking up.

Q. While you were in Grace's Health and Safety Department did you conduct any testing involving products?

MR. RESTIVO: By "you" you mean the witness, or do you mean Grace?

MR. TURKEWITZ: I'm asking the witness.

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MR. RESTIVO: Him personally?
MR. TURKEWITZ: Yes.
BY MR. TURKEWITZ:
Q. While you were in the Health and Safety Department did Grace -- I'll ask it the other way.
While you were in the Health and Safety Department did Grace perform testing on vermiculite products?
A. Yes. There was quite an extensive program developed for testing of vermiculite products, and I was involved in that for almost three years.
Q. And can you describe generally the types of testing that was performed by the Health and Safety Department during that three-year period.
A. Right. I would say that the original work started, I believe, in around 1976, and this was done in that time period with a manager from Construction Products Division named Robert Locke. I'm going to call him Bob.
Bob was placed in charge of doing evaluation of product testing, and they needed help with the air-monitoring work that was to be done. At that time they approached our department, Health

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and Safety, because we were doing all the auditing and air monitoring in the Construction Products Division plants. So the request was made to have me work with Bob Locke to develop the air-monitoring program for product testing. The very first product that we tested was zonolite attic insulation or ZAI, and this then went on to other products including monocote and masonry fill and roof deck material.
Q. You mentioned zonolite attic insulation, ZAI.
What was ZAI?
A. ZAI when I first become aware of it as a product was an expanded vermiculite which immediately came from the Libby Montana mine, not from South Carolina, and the reason is is that the Libby product had a much larger size.
Vermiculite was sized from 1 to 5, 5 being the smallest size and 1 being the largest size. There may have been a zero size, too. I'm not sure, although I saw some South African vermiculite that was very big, about the size of a quarter, which was probably a 0O size. But what we got at Libby for zonolite attic insulation was mainly Libby 1 and 2 and occasionally some 3 was

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used, and those products I became very aware of right from the very beginning. It was the first product we tested.
Q. And the Libby vermiculite that was used, was that contaminated with asbestos?
MR. RESTIVO: Object to the form of the question.
A. Well, there was no doubt that the Libby vermiculite contained asbestos as a contaminant. They didn't want it there. That was really the problem, was the material; the major problem. There were other issues with dust, respirable dust and so forth, visible dust from it, but the major issue in terms of health from the standpoint of my department was the issue of tremolite exposures which would occur during not only the manufacture of ZAI but during the application of ZAI and to the end user.
Q. Did all of the three grades that you mentioned, Grades 1, 2 and 3, that was used for ZAI -- did all three grades contain asbestos?
A. Yes.
Q. Were you familiar with how ZAI was installed?
A. Yes.

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Are you talking about "installed" in like in the end application as an insulating material?
Q. Yes, sir.
A. It would be installed by carrying bags into an attic area or an area to be insulated. Sometimes it was the wall cavities. The bags would be opened, the material would be poured out, the bags would then be collapsed, and sometimes overpacked one bag -- you know, five bags into one other bag, and then those bags -- the empty bags were taken out, the material was spread evenly to spread it out in an attic, and sometimes it was done with a broom or a paddle or some kind of device to spread it out even, to rake it essentially.
Q. And who generally installed zonolite attic insulation?
A. Well, I don't really know, but most of the time when we thought about attic insulation in homes, just in terms of raw numbers of people, it probably was homeowners; but in terms of volume, it was probably contractors because contractors were installing this over and over and over. So you had one crew working on several jobs, whereas just in

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terms of number of people involved would be homeowners.

Q. And do you know how long it generally took to install zonolite attic insulation in a home?

A. Well, from the work that was done by Fred Eaton, who was an engineer in the Construction Products Division, and in talking to people about that product, people that sold it and so forth, it appeared as though it would take approximately two days to do an attic. If one person was doing it, it would take approximately two days from start to finish to install between 70 and 90 bags.

Q. And did you yourself conduct testing on zonolite attic insulation?

A. Yes. I believe I was involved with the very first test ever done on ZAI in the Cambridge facility.

Q. And what type of testing were you involved in where you were actually directly involved in performing?

A. Yes. I didn't set the test up. My job was to work with the technician, Steve Venuti, and first name is Stephen.

Stephen Venuti and I worked with Bob

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Locke to conduct a test on the fiber generated -- the airborne fiber levels generated during the manipulation of zonolite attic insulation in the Cambridge facility in a test room with dimensions I have written down somewhere in some of the documents, but it was approximately the size of an attic. About the size of this room essentially in terms of cubic feet and volume.

The room did not have any ventilation, and we poured the bags on the floor. I think it was eight or ten bags of vermiculite, 3-cubic foot bags, and we then spread it around on the floor for probably eight to ten, maybe 12 - 15 minutes. The air monitor would be able to show this.

We collected air samples in the room on Steve Venuti and one in the middle of the room as an engineering control sample and we did a series of tests in the morning of one day and then in the afternoon we did another series of tests after the material had been wetted. So we did a dry test and then we did a wet test.

Q. Was that testing referred to as simulated attic testing?

A. I think that would be appropriate. We were trying to simulate a closed space and what

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types of fiber levels would be generated in a space during the manipulation of a typical zonolite product manufactured in an expander from -- I forget what plant. Maybe it was East Hampton. East Hampton was close by. Occasionally we would get our material from there.

We wanted to know for the first time what kind of levels would occur to people who were involved with the installation of this material, what types of fiber levels would be generated in a simulation of pouring this and working with this material in a closed space like an attic.

Q. Now, I've seen some other testing. I've seen some testing referred to as drop testing.

Were you familiar with drop testing?

A. Yes. The equipment for doing the drop testing was actually in the next room over -- we could see it. -- and that was designed to look at what would happen if the material were in a hopper and you open a door and the material then just fell out into a space.

It appeared to me as though that was trying to simulate types of jobs where the material would be in bulk form or maybe similiar to what it would look like coming out of the end of a bag as

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you're pouring it out, and the beauty of that was you didn't need people in the room. You could set up sampling equipment and be outside the room. So you could do some really severe testing without exposing people in the room. It could be done remotely essentialy.

Q. And then are you familiar with actual attic testing that was performed at W.R. Grace?

A. Yes. There were some -- there was a simulated attic which was developed and built in one of the plants, one of the expander plants, and one of the engineers that I trained who worked with air monitoring was assigned to doing tests on that attic and then there were tests that were conducted by that same engineer in actual attics in homes throughout 1977. That time period.

Q. I want to show you some documents, and let me go ahead and show you what has been marked as Hamilton Deposition Exhibit 1 and ask if you can identify that document for the record.

A. Yes. This is dated 1/31/77 and this is a test of the -- I believe this was the attic simulation testing which was done, a drop test.

I'm sorry. This is a drop test that was conducted in Weedsport. There were 18 samples

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that were taken by Fred Eaton, and in this they're using what appears to be possibly two different types of Libby 2. It's not quite clear from the notes here, but there clearly is a drop test being done here with Libby 2 material.

Q. And the material that was tested, was this material that was production material from the plant to your knowledge?

A. Yes. This looks like one of the standard drop tests, probably one of the first ones done, and I think they were studying the methodology and working out the test methods a little more. This would have been just standard Libby 2 material that was production material.

Q. By the way, on the first page on the upper right corner, is that your name appearing on the document?

A. Yes. I'm the requester of this document, which is the chain of custody for — we call this the chain of custody. This document is the way we submit samples to the laboratory for analysis. We had to have a standardized method for getting samples in for analysis. This was the request for technical services to the laboratory.

It was a very organized method for

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getting samples into the lab and following the possession of these samples right through analysis.

Q. And this process went from you; correct?

A. Yes. This was requested through me to the laboratory. Sometimes I would be the requester, sometimes I would be the approver, and sometimes I would just be getting a copy. It depended on the various stages in this process.

When this first started Harry Eschenbach was always in charge of sending samples to the lab and occasionally I would be the requester of it. Later I became the approver of it. Later I was just a person in the room.

Q. And turning to the second page, is there a summary of the results?

A. Yes. The summary states that the 20 samples received from Woodsport, 18 samples contained more than two fibers per cc, while the other two samples contained less than two fibers per cc.

Q. And turning to the next page, is that an Air Sampling Record Sheet?

A. Yes. This record sheet was designed by me. It was a sheet that was put together to submit

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samples to the laboratory. We needed a sampling sheet system for doing this. One of the things I did after I started there is put together this sheet.

Q. And what was the range of the airborne fiber levels found during this testing?

A. If you ignore the background tests, just look at the drop tests themselves, the highest level appears to be 13.2 and the lowest level appears to be 3.85.

Q. When you say "13.2", is that 13.2 fibers per cubic centimeter?

A. Yes.

Q. How many fibers would that be per cubic meter at 13.2 fibers per cubic centimeter?

A. Well, there are one million cubic centimeters in a cubic meter, so you would just multiply this number by one million and you would have the number of fibers that would be contained in the space of one cubic meter, a cubic meter being approximately 38 inches X 38 inches X 38 inches.

Q. So that would be 13.2 million asbestos fibers per cubic meter?

MR. RESTIVO: Object to the form.

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A. Yes. This would convert to 13 million fibers per cubic meter.

Q. I would like to talk to you now about the simulation testing that you referred to before.

Let me show you what has been marked as Hamilton Deposition Exhibit 2 and ask if you can identify that.

A. Yes. This is a document dated March 3, 1976, requested by me to the Construction Products Division laboratory to evaluate samples which were collected in the Cambridge plant.

MR. RESTIVO: I'm sorry. I don't mean to interrupt. My copies don't have numbers on them yet. What was the date?

THE WITNESS: We'll go to the top number at the very top of the form. 48876.

MR. RESTIVO: Give me the date one more time, sir.

THE WITNESS: March 3, 1976. 48876 at the very top of the form. This is Hamilton 2.

MR. RESTIVO: I'm with you. Thank you, sir.

BY MR. TURKEWITZ:

Q. Are you listed as the requester?

A. I am listed as the requester of this

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document.
Q. And what does this testing show? What was this testing for?
A. This was the original – what I believe was the first testing ever done on zonolite attic insulation in the test room in Cambridge which was conducted on March 2nd, 1976, by me and Stephen Venuti under the direction of Robert Locke, and we took ten bags of attic insulation, placed it on the floor for the first four samples there, and this was spread by Steve Venuti with – I believe it was a broom he was using to spread it around and move it on the floor.
Q. And was this the testing you referred to earlier that was done in a room next to where the drop testing was done?
A. Correct.
Q. And on Page 2 does it describe the results, summarize the results?
A. Yes. The summary of the results says seven samples received from the Cambridge plant. Four samples had a count of less than five fibers per cc. Samples 1, 3 and 4 showed a count of over five fibers per cc, and No. 3 being the highest fiber count. Samples No. 2 and 7 were counted to

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100 fields and all the others were counted to 50, and the reason for that is when they got to a certain number of fibers they stopped counting at 50.
Q. And turning to the next page, does the report set forth the actual airborne levels that resulted?
A. Yes. The airborne levels are shown in the last column on the right-hand side of the engineering test sample page and the results range from 3.6 to -- well, approximately 16 fibers per cc for the dry vermiculite. We then redid the tests in the afternoon with wetted vermiculite and the results dropped -- we had three samples in the afternoon. The end results dropped to about -- from .8 to 2.2 fibers per cc of wet vermiculite.
Q. What activity was being tested with the dry vermiculite?
A. The material was poured on the floor, as I recall, and then spread around with a broom. We just pushed it around with a broom trying to level it out, simulating what you would do if you poured it out in an attic and then would fill in the joist area.
Q. Where were the samples analyzed?

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A. These samples were analyzed in the laboratory in Cambridge which was directed by Julie Yang.
Q. How were the samples analyzed?
A. They were analyzed, I believe, by phase contrast microscopy.
Q. Let me show you what has been marked as Hamilton Deposition Exhibit 3 and ask if you can identify that document for the record.
A. This is Document No. 48876. Again –
Q. Is that the same as the last document?
A. The same as the previous one.
Q. Is there any difference between this document and the previous document?
A. The difference between these documents is that one of the samples, sample – the third sample marked Sample No. CAM-3 has a change in the result. On the first document it was 6.0 and on the second document it's 28.88.
Q. 28.88 fibers per cubic centimeter?
A. Correct.
Q. Is there any indication on the front page of this document of where this actual copy came from or where it had gone to?
A. Well, the difference between these on

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the front page is that it appears as though the first document, which is Hamilton 2, was sent to Dr. Duecker and the second one was sent to my file. So the file copy had a higher number than Dr. Duecker's copy.
Q. Is there any reason why the file copy would have a different result or higher number?
A. Yes. I don't really understand exactly why this occurred, but there were times when results were QC. We had a quality control procedure that Julie Yang had in the laboratory and on occasion -- not very often -- an audit would be done – a QC audit would be done on the results, and on occasion an error was made, and whenever there was an error it would be corrected and that would show on the file copy.
So sometimes what would happen is an error would be made, it would be redistributed, and that would mean that the final resulting file copy would be the most accurate because of the QC procedure that had been done, and the reason I say that is because the handwriting appears to be a different person who wrote the 28.8.
Q. Now, with respect to this testing that we see in Exhibits 2 and 3, where did the material

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that was tested come from?
A. I'm not exactly sure where this material came from, but most of the time when we were working initially in the Cambridge facility our material would come from East Hampton, Mass., because that was the closest facility to Cambridge. So the cost of getting it to Cambridge would be the least.
Q. It states: Ten bags attic insulation Libby 2.
Would that have been production material that was used?
MR. RESTIVO: Object to the form of the question.
A. I believe that this was production material which was just taken right off the line at East Hampton.
Now, it may have been a different plant. It may have come from a different vermiculite expander plant, but in general this material here would have just been straight production material brought into Cambridge and tested, because this was the very first test of the material that I know of was ever done.
Q. Was it important to use production

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material in testing?
A. I think the answer to that is yes. I mean, it really was important that we didn't bias the results. We wanted to do things to make sure that there were no confounding factors.
When we first started testing, we just wanted to get straight production material in. We didn't want to do anything special because otherwise the results would be confounded, they would be biased, and wouldn't be as useful.
Q. I would like to show you now what has been marked as Hamilton Exhibit 4 and ask if you can identify this document for the record.
A. This is document – this is actually No. 67527, and this is the evaluation samples that was brought in from Weedsport, and in this case the requester is Fred Eaton and I approved it. My signature is not there. You can see this was signed for me by my secretary, Barbara Pat. That's the "D.B.P."
Q. And is there a date for this testing?
A. The testing was actually conducted on May 17th, 1977.
Q. And what material was tested here? Strike that.

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What type of testing was conducted?
A. According to the chain of custody, this is a simulated attic test that was conducted in Weedsport, so this would be in the facility that was constructed in Weedsport for doing this type of testing. And they were pouring zonolite attic insulation, and what is interesting about this is this is the first document showing where they had several different types of amending products that were applied to the vermiculite, although they did actually do some controls with no binder, but the first sets of samples here were conducted on zonolite attic insulation which had been treated with a binder material, what I call amending or amending the product.
The product had been changed in an attempt to find a binder, and various types of binders had been looked at and developed for testing by Julie Yang at her suggestion, and the binders were applied at a manufacturing plant – I don't know which one. It doesn't say here. -- and then those products were shipped to Weedsport or maybe manufactured in Weedsport and then the simulated attic testing was done with these products.

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Q. Now, are you familiar with the OSHA standard?
A. Yes. The OSHA standardized test?
Q. Yes.
A. Yes.
Q. And the current OSHA standard, is there an excursion limit to the current OSHA standard?
A. I think you're talking about the maximum limit of exposure excursion limit, which is one fiber per cc of air.
Q. Why does OSHA have an excursion limit, do you know?
A. Well, there is also a limit in there of one – of 0.1 fibers per cc, which is an allowable average for a worker to have during a workday, an eight-hour day. The excursion is the upper limit that should never been exceeded during the workday, but that's without respiratory protection.
The OSHA standard is designed to say you can have exposure with an average .1 for the day, but you should not exceed 1 during the day without adequate respiratory protection.
Q. And looking at these results, with a binder -- and Grace used a binder on the material – what was the range of the results?

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A. Well, the range on the first page goes from 0.37 to 3.15.
Q. And how many samples were collected, total samples collected, with the binder?
A. 11.
Q. Of those 11 how many of those samples exceeded the current OSHA excursion limit of one fiber per cc?
A. Eight.
Q. And on the next page was there any testing performed as a control?
A. Yes. They did two control samples, two control events. And you have to understand that these are all doubled up because Fred Eaton collected samples on both shoulders of the employees. It was set up with one sample collected off the right shoulder and one off the left shoulder of the worker doing the work.
So there were two control events, and the range on these two went from 1.43 to 5.7, and all four of them exceeded one fiber per cc.
Q. What was the range -- I'm sorry.
A. Yes. I said that. It went from 1.43 to 5.7.
Q. There is a note at the bottom of that

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page. It states: Lab analysis should indicate if small amount of fines have any effect on personal exposure.
Did I read that right?
A. Yes. It says: Lab analysis should indicate if a small amount of fines removed have any effect on personal exposure.
The reason that's there is because there were two tests done with material that was not bound. The first test was done with material that had been passed over a 14-mesh screen in the plant, so it was screened material. The second material was a control which was not screened, and by looking at these results you can see that the screened material came in at levels of approximately one-third of the levels of the nonscreened material in terms of the overall fiber level generated during the testing.
Q. What are fines?
A. When the vermiculite is expanded there is rock asbestos, shards, little tiny pieces of asbestos, pieces of vermiculite that are very small; and when you pass this over a screen, those small pieces fall out, so that what you're getting is a product that has less fine in it. The

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finished product then comes through over that screen is cleaner in terms of small particles than the nonscreened material.
Q. And here they're referring to the fines being removed from the material being tested; is that correct?
A. That's correct.
Q. To your knowledge did W.R. Grace ever manufacture zonolite attic insulation with the fines returned to the product?
A. Yes; as I understand it, although I wasn't in manufacturing, but it was explained to me by the manufacturing engineers and some of the production managers that there were times when the fines were put back into the product. There were cyclone fines that were pulled out for dust control which were eventually put back into the product.
See, the dust collectors would actually pull product out during the cleaning, and that product had value, so it was put back into the product, although at the time it was collected to control dust in the air and fiber in the air.
Q. And do you know approximately when that practice stopped, if it ever did?
A. I know that there was a letter that was

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written informing them to not do that, but I don't recall the exact date, but I know that -- I believe it was Reed Wright who was one of the manufacturing managers eventually wrote a letter, probably as a result of this work that was done, that said those fines are not going to be recycled into the product. They're going to be hauled off as waste.
Although I don't know the exact date of that, it probably was sometime in the late '70s. Soon after this.
Q. I want to go back to the earlier testing that we were looking at.
In looking at Exhibit 1, we were talking about the OSHA excursion limit of one fiber per cc.
A. Yes.
Q. By the way, under the OSHA excursion limit are there certain precautions that are required for workers to take when the levels reach that level?
A. Yes. A lot of things get triggered when you're at those types of levels. There would be a trigger for protective equipment to make sure employees are properly protected. There would be a trigger for medical monitoring, which already is

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there. There would be a trigger for training of the employees. There would be a trigger for a program, policy, within your company to do all of these things. Those are the types of things that we see that are triggered.

Q. In looking at the first test, the drop testing in Exhibit 1, how many samples were collected?

A. A total of 20 samples were collected. Two of those were background samples.

Q. So 18 of those samples were during the actual activities?

A. Yes. Those were actual activities during -- with drops.

Q. And of those 18 samples how many of those samples exceeded today's OSHA excursion of one fiber per cc?

A. All 18 of them were above one fiber per cc.

Q. And turning to Exhibit 2, the same question.

A. Exhibit 2, of the seven samples -- and this was the original work done by me in Cambridge of dry material versus wet material with Steve Venuti, and of the seven samples all but one of

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them exceeded 1.

Q. And the one that did not exceed 1, was that one of the wet samples?

A. Yes.

Q. I would like to hand you what has been marked as Deposition Exhibit 5 and ask if you can identify this document for the record.

A. This is a request for engineering -- for technical service dated June 3, 1977. It was requested by Fred Eaton and approved by me, and this is for evaluating attic test samples from Weedsport, and there were six samples which were submitted.

Q. And again, this is simulation testing done in a simulated attic at Weedsport?

A. Yes. According to the chain of custody it's a simulated attic test, no binder.

Q. By the way, the simulated attic, how was that constructed?

A. I never really saw it. I never saw it and the pictures of it were always obscure to me and nobody ever told me about it. I wasn't involved in the design or the construction of it, and I never actually saw it that I can recall.

Q. Well, are you familiar with the purpose

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of that testing?

A. Yes. The purpose of the testing was to -- I believe that we wanted to -- I shouldn't say it that way.

I believe the Construction Products Division wanted the simulated attic to be at an expander plant and not to do it in Cambridge, because there really weren't facilities for doing it in Cambridge that were appropriate. Doing it in an expander plant made much more sense. And Weedsport had the room for it, so it was done there and it was close by. It wasn't difficult to get to Weedsport, and I do not believe that anybody in the Health and Safety Department was consulted on the design or the use of that for the drop testing. That was all designed by people from the Construction Products Division, constructed by them and operated by them.

Where I was involved was in the collection of the samples and the analysis of -- getting these into the laboratory, they had to go across my desk.

Q. And what material was tested for this simulated attic test in Exhibit 5?

A. This is all Libby 1 material, 4-cubic

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foot bags of Libby 1. I don't see any listing on here of where the material was produced.

There were three different tests. One test was product. It wasn't screened. Another was product that was over a 14-mesh screen and a third was product over a 5-mesh screen.

Q. And is there a summary of the results?

A. The summary states that six samples were received from Weedsport attic test -- six samples were received from Weedsport attic test and were analyzed. All contained more than two fibers per cc.

Q. And obviously all of these results would exceed the current OSHA excursion limit; correct?

MR. RESTIVO: Object to the form of the question.

A. All of these exceed one fiber per cc. That's correct.

Q. And what was the range of the results?

A. The range was from 3.42 to 5.70.

I must say that there was a tendency in reporting these results from the laboratory to use more significant digits than would be allowed. In general there is only two significant digits and

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they're reporting it out to three, so the third digit is irrelevant.
Q. When you say the "third digit" --
A. The third digit, which is the hundredths column.
Q. And why is that?
A. Well, because when you're working with significant digits and rounding and so forth, you can't create more digits than what you started with. That's just -- that's a statistical law. You lose all your accuracy once you go past the number of significant digits you started with.
Q. How much variability would there be?
A. That's an interesting question because there is variability in any testing method.
The actual sampling method here at the time that this was done between the air and the measurement of the flow rate and the measurement at the time and then the error which is inherent in the counting process, it is supposed to be plus or minus 15%, so you would have a swing of 30%, 15 in either direction. But when we first started out in this and the way we were measuring the flow rates, it was difficult to get a primary standard into the field. The best we could do is what we call a

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secondary standard for measuring flow rate, and therefore that would tend to increase the opportunity for error.
I would say that these numbers are probably accurate to within plus or minus 30% of the true mean value.
Q. Is there another report also attached to Exhibit 5?
A. Yes. It's dated June 3rd, 1977, and it's No. 67543. This is an evaluation of attic test samples, and these are 16 samples from Weedsport, which were engineering test samples.
Q. What does that mean, that they're engineering test samples?
A. Well, in general we stamp things that were engineer test sampled, that these apply to anything that wasn't involving occupational exposure in the plant to production material.
If the Health and Safety Department went out to an expanding plant and monitored exposures during normal production, that would be a normal air sampling evaluation of the workplace. That would not be stamped engineering. But when Fred Eaton went out and did his work, we wanted to make sure that everybody understood that this was a

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simulation; this wasn't -- we weren't actually doing product work here that involved employees of the company who were in production. This was a special test done for engineering purposes to figure out what types of levels of exposures we were getting. It had nothing to do with production material.
Q. And what type of test -- what was the testing of what was being tested in this next report?
A. This is called the Second Simulated Attic Test, and apparently this was done with binders that were developed by Julie Yang and the material here -- let me see if it says what size it is.
I don't see anything on here that says what size Libby material it is. Maybe you see it. I don't. But this was a pouring of attic test material.
MR. RESTIVO: I'm sorry, sir.
Are you looking at the page that says "Second Simulated Attic Test - Yang Binder Test" at the top?
THE WITNESS: Yes.
MR. RESTIVO: Does Footnote No. 4 help

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you answer --
THE WITNESS: There it is. I know it was on here somewhere. It's Footnote No. 4. Thank you. All material of Libby No. 1 where cyclone fines were removed.
BY MR. TURKEWITZ:
Q. So this was a test done with a binder and the previous test that we looked at was a simulated attic test without a binder; is that correct?
A. Yes. The simulated attic test that we talked about previously that are attached to this document dealt with material that had been screened and nonscreened, and this is material on the second simulated test that involved material that had been -- had a binder applied to it.
Q. Now, how do the levels compare between the testing without a binder and the testing with a binder?
MR. RESTIVO: Object to the form of the question.
A. Well, I should also add that there was another note in here that says that materials that have a 12 series in front of them were screened. So not only do we have material with just a binder,

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we also had material that had a binder and screened.

When comparing these results all of the results were above one fiber per cc, and it really didn't matter whether it was screened or nonscreened or whether it had binder or didn't have binder.

It's hard to make a generalization. It doesn't appear as though using the binders really had that much effect on it. There was some effect from the binder, but it wasn't dramatic enough to really improve the product, to get it below 1.

Q. Then at the bottom of the last page, was there testing done during cleanup?

A. Yes. There appears to be two samples that were done during cleanup. I'm not really all that familiar with how they did the cleanup, the process that was used. It was never described to me, but there was a note here that "did not include vacuuming". So the cleanup was probably done with shovels. I don't believe they do it with sweeping, but these were -- these samples -- there is a note in here that one of the samples was too dusty to count.

Q. And the one that was counted, what was

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the level?

A. The one that they were able to count was a result of 1.35 fibers per cc.

Q. Going on, I would like to show you Hamilton Exhibit 6 and ask if you can identify that for the record.

A. This is Document 67573 dated 7/14/77 and this was -- by this way, this was approved by me and --

MR. RESTIVO: Excuse me, Mr. Hamilton. Would that be Document 67571, not 73?

THE WITNESS: Well, mine says 73. Is that a 3?

MR. RESTIVO: Look at the second page.

THE WITNESS: No. This says 67573.

MR. RESTIVO: Give me a minute to find the right document. What is the date?

THE WITNESS: 7/14/77.

MR. RESTIVO: And this is Exhibit 6?

MR. TURKEWITZ: This is Exhibit 6.

THE WITNESS: So 67573 is Exhibit 6 and this was, again, four samples from Weedsport, simulated attic test with Libby No. 2.

BY MR. TURKEWITZ:

Q. The previous test that we looked at,

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that was Libby No. 1; is that correct?

A. Yes. This was Libby 1.

Q. And this is now Libby 2 being tested?

A. Correct.

There is no laboratory sheet attached to it, but the results page of the summary says: Evaluation was made of four simulated attic samples from Weedsport. All four exceeded two fibers per cc of air.

Q. I would like to show you what has been marked as Hamilton Exhibit 7 and ask if you can identify this document for the record.

A. Right. This is No. 67572. This was the evaluatation -- by the way, this was approved by me and collected by Fred Eaton. It was submitted 7/14/77. Eight simulated attic samples from Weedsport, and the summary says that all exceeded two fibers per cc of air. This was a simulated attic test of Libby No. 3 which was screened over a 14-mesh screen.

Q. How many samples -- in the first test report how many samples were analyzed?

A. Let's see. They were eight samples total collected here.

Q. What was the range of the results?

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A. The range was from 0.75 to 2.71.

Q. Of those results how many of those results exceeded the OSHA excursion limit of one fiber per cc?

MR. RESTIVO: Object to the form of the question if you're suggesting that was the OSHA excursion limit on the date of Exhibit 7.

MR. TURKEWITZ: We're referring to today's OSHA excursion limit.

A. Right. Seven of them exceed one fiber per cc.

Q. Is there a second test attached to this report?

A. Yes. It's No. 67571 dated 7/14/77. These are the evaluation of attic test samples from Weedsport for Libby No. 2, and there were two samples submitted on this.

Q. And was anything -- how was the material treated in this testing?

A. This appears to be a control test of 4-cubic foot -- we'll call it the 4-cubic foot bag size. It says the material was dusty during the pour and the results ranged from 4.78 to 5.78, and there were only two samples collected.

Q. Was this screened Libby No. 2?

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A. Yes. This was simulated attic test with screened Libby No. 2 over -- does it say what size screen?

I suspect that this was the same screen as the screened material here, which I think was a 14 mesh.

Yes. It probably was the same material as the previous, and it would be a 14-mesh screen.

Q. And again, both of these samples exceed today's OSHA excursion limit?

MR. RESTIVO: Object to the form of the question.

A. Yes.

Q. I would like to show you what has been marked as Hamilton Deposition Exhibit 8 and ask if you can identify that document for the record.

A. This is No. 67575.

Q. And what was being tested -- what is the date of this test?

A. This is dated -- the report date is July 25th, 1977. The collection date I think was July 17th, although that could be the 19th.

Q. And what was tested in this report?

A. This was the simulation of attic test of Libby No. 3, and it was screened on the 14-mesh

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screen.

Q. By the way, I don't see your name on this report.

Would this report have come across your desk?

A. Yes. Although the cover page for the technical request is not attached to the front of this document, this document would have gone -- at that time period this document would have been requested by me.

Q. And looking at the results on Page 3, can you read the results better than you can on Page 2?

A. Yes.

Q. And at the bottom it states: Test 19AS 1 and 2, screened 14-mesh, cyclone fines returned to product.

A. Unbound.

Q. Unbound.

A. And then the Test 19BS 1, 2, 3 and 4 were the same, but it was bound. It had a binder on it.

Q. Why were they testing the product with the cyclone fines being returned to the product?

A. Well, as I stated earlier, the cyclone

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fines were fines that were actually product that were pulled off during the manufacturing because of the bag houses that were there to control dust and so forth would pull product as well as dust, and the cyclone would spin out the heavier product and those would drop out and the lighter fines and so forth would pass through at the bag house.

By having the cyclone there you were able to recapture product which has been pulled off during the manufacturing as an emission. You could then reclaim that product, put it back in. It's actually expanded vermiculite and some things that you want to throw back in because it has value, actual value.

Q. And what were the results of this testing of Libby No. 3 with no binder?

A. Okay. The first -- Samples 1 and 2, which are the first four samples with no binder on them, range from 1.01 to 4.79, I think, or maybe 4.99. I can't tell.

Q. And how many of those samples would exceed or exceed today's OSHA excursion limit of one fiber per cc?

A. All four of them would exceed that limit.

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Q. And what was the range of the testing of the material with a binder?

A. That ranged from, it looks like, .49 to 2.51 with four of those exceeding one fiber per cc.

Q. I would like to show you what has been marked as Hamilton Deposition Exhibit 9 and ask if you can identify that document for the record.

A. Yes. This is number -- I can't read that. It's 675 something 82, it looks like. 67582 dated August 4th.

I'm sorry. These don't appear to be -- I see. They were submitted on August 1, but it was reported on August 4th. This is 36 simulated attic test samples that were done in Weedsport by Fred Eaton, and it looks as though this is all Libby 2.

Q. In looking at the results, was the first set of test results Libby 2 unscreened with all cyclone fines returned to the product?

A. Yes. That's the 20A series. So anything beginning with 20A is Libby 2, which is unscreened, all the cyclone fines returned to the product.

Q. And what was the range of the results of this testing?

A. Just looking at the 20 series now, the

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range was from 0.47 to 4.56 with 11 of them exceeding one fiber per cc.
Q. And then --
A. That's 11 of 12 samples exceeding one fiber per cc.
Q. Is there another test that was done of Libby 2 with all cyclone fines pulled from the product?
A. Yes. That's the 21 series, indicating sample beginning with 21 would be Libby 2 unscreened with all cyclone fines pulled, and it appears as though there are eight samples with that 21 designation, and the range on that is from .21 to 2.4.
Q. How would you compare the range of results for the material where the cyclone fines had been pulled to the results with the material where the cyclone fines were returned?
MR. RESTIVO: Object to the form of the question.
A. I think if you were to average these out you would see that the fiber levels are less than one half -- when you don't return the fines to the product, the fiber levels drop by more than 50%.

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Q. So with the fines returned to the product, the levels are twice as high?
A. With the fines returned to the product the resulting fiber level at the attic simulation test was at least -- it was more than twice as high.
Q. And then did the testing repeat itself once again?
A. It appears that they then did on the 26th of July, which was earlier -- they did No. 2 Libby, which was screened with 14 mesh with all cyclone fines removed, and this is what is known as the 23 series, the sample known as beginning with 23, and in this case the sample results ranged from 0.46 to 1.37 with only one of those samples above 1.
Q. And that's Libby 2 screened with all cyclone fines removed?
A. And it went over a 14-mesh screen.
Q. Now, looking at the page prior to that, is there another test done on 22 series samples with Libby 2 screened, 14 mesh, with all cyclone fines returned?
A. Yes. That's the difference between the 22 series and the 23. It's Libby 2, 14-mesh

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screened. The difference is in the 22 series the fines were returned, whereas in the 23 series the cyclone fines were removed.
Q. And again, what is the difference in the results based on the range of those results -- what is the difference between the Libby 2 screened were the fines were removed to the Libby screened where the fines were returned?
MR. RESTIVO: Object to the form of the question.
A. On average it appears as though there was about a 50% reduction in the resulting airborne fiber level when the cyclone fines were removed.
Q. I would like to hand you what has been marked as Hamilton Exhibit 10 and ask if you can identify that for the record.
A. Yes. This is No. 67583 dated 8/3/77. These are attic test samples from Weedsport and there were eight tests -- eight samples submitted.
Q. And what material was being tested here?
A. This is a simulated -- by the way, I'm the requester. I'm sorry. I'm the approval on this document.
The simulated attic test for

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Libby No. 1 and this is a screened Libby 1, 14-mesh, with all cyclone fines removed.
Q. And what was the range of the results there?
A. The results ranged from 0.61 -- I'm sorry. 0.55 to 1.83. Of the 12 here there is -- nine of the 12 exceeded one fiber per cc.
Q. Is that 12 samples?
A. I'm sorry. There is averages in there.
It's eight samples. There are some averages in there of those samples. So we have eight samples and six of them exceeded one fiber per cc.
Q. I would like to show you what has been marked as Deposition Exhibit 11 and ask if you can identify that document for the record.
A. This is Document No. 67584 dated 8/3/77, and it involves sampling in Weedsport, the attic testing in Weedsport, and there were eight samples submitted.
Q. What material was being tested here for the simulated attic test?
A. Now, this is Libby No. 1. It's a screened. I can't read what mesh that is and even Jack Wolter couldn't tell, but it is 14 mesh,

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according to the note on the front of it. So this is a 14 mesh with all cyclone fines returned to the screen.

Q. What does that mean by "all cyclone fines returned to the screen"?

A. Well, as I understand it, there was a screen in what we call the stoner. They put a screen in there and they were trying to get the fines and so forth out of there.

In the process there are times when the cyclone will pull product because it's pulling strongly, and you can take those cyclone fines and put them anywhere they want. In this case they returned it right to the screen to try to just get vermiculite product salvaged out of that.

Q. So this is a material that the fines are not going back into the product itself?

A. No. It's not going into the product bag. It's going into what they call the stoner, I believe, which would be the screening area.

Q. Is there a note at the bottom describing the material?

A. Yes. This material was very clean and dust free.

Q. And what was the range of the airborne

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fiber levels that were found during this pouring of material?

A. The low was 0.78 and the high was 1.81. Seven of those exceeded one fiber per cc.

Q. Seven out of eight of those samples exceeded one fiber per cc?

A. That's correct.

Q. I would like to show you what has been marked as Deposition Exhibit 12 and ask if you can identify that for the record, please.

A. This is — I believe it's 67591, and it's four tests from samples from Weedsport and — I'm sorry. It's eight simulated attic test samples from Weedsport, four tests but there are two lines.

MR. RESTIVO: Mr. Hamilton, I'm sorry. Can you give me the number again.

THE WITNESS: Yes. It's obscured on mine, but it looks like this.

MR. RESTIVO: Would you agree Exhibit 12 appears to be, based on the second page, No. 67591?

MR. TURKEWITZ: Yes.

MR. RESTIVO: Thank you, sir.

A. This was a simulated attic test for Libby No. 3 product. It was screened on 16 mesh

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and it had a binder and all the cyclone fines were pulled.

Q. And are the results summarized on the second page?

A. Yes. The results say that eight simulated attic test samples from Weedsport were received and evaluated. Six samples also exceeded the limit, and that would be the limit of two fibers per cc.

Q. Turning to the second page, what was the range of the levels that were found?

A. The range there was from 1.86 to 2.61.

Q. And this is a material where all the cyclone fines were pulled?

A. Yes.

Q. And of the eight samples how many of those samples exceeded the current OSHA excursion level of one fiber per cc?

A. All eight of them exceeded that.

Q. Sir, I would like to show you what has been marked as Hamilton Exhibit 13 and ask if you can identify that for the record.

A. This also -- in order to read the number you have to go to the second page. It's 67590, and this is a simulated attic test from

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Weedsport with eight samples were submitted and this was a simulated attic test of Libby No. 3 screened on a 16-mesh screen with all cyclone fines pulled.

Q. So the last test that was done was when a binder was applied; is that correct?

A. Yes. The last test talked about a binder which had been applied, and this test is similiar material with no binder.

Q. And what was the range of the test results for this test which is marked as Exhibit 13 dated August 19th, 1977?

A. Right. The range of results on the eight samples was from 0.7 — 0.50 to 1.28, and four of these exceeded one fiber per cc.

Q. Can you explain why the levels of this unbound material are in this situation lower than the levels in the previous testing where the material was bound?

MR. RESTIVO: Object to the form of the question. I object on the grounds lack of personal knowledge.

A. Well, you know, it's interesting that those levels would look different to you. I find that most people that look at data like this, they

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see a difference between 1.01 and 1.28 and 2.04.
To me those are identical. There is no difference between the data, and the reason I say that is because of the margin of error. When you put the error bars on they seem to overlap. If you say: Okay. Take the first set of data and put the error bars on it and take the second set and put the error bars on it, they probably would overlap.
This could be a precision error in the reader, the way the reader did them. It could be an error in the way that it was collected; they did something slightly different, but from my view in having looked at thousands of these types of samples, these results don't look that much different to me. Another way of saying it is that in my opinion putting a binder on really didn't change things.
Q. Let me show you what has been marked as Hamilton Exhibit 14 and ask if you can identify that document for the record.
A. This is No. 67589. This is dated 8/18/77 and this was for 32 attic test samples.
Q. And is that your name at the top right on the first page?
A. Yes. I am the approver on this.

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Q. And what was being tested in this round of testing?
A. These are the simulated attic tests for Libby No. 3. It appears all of this was screened and all the cyclone fines were pulled.
Q. And are the results summarized on the second page?
A. Yes. The summary states 32 attic test samples were received from Weedsport and evaluated. 28 samples exceeded the limit, and that limit there would have been the limit of two fibers per cc.
Q. And looking at the actual record, the Air Sampling Record Sheet, can you tell us what the range was for the results during this testing?
A. Yes. Some of these had binder put on them.
If we're looking at the very first test sheet, which was Libby 3 screened, 14 mesh, all cyclone fines pulled with no binder – we have eight samples here. The range was from 1.58 to 3.74, and all of these exceeded one fiber per cc.
Q. And then the second page, is there –
A. The second page is again Libby 3. In this case we have 14-mesh screen, all cyclone fines pulled, and this indicates a binder had been

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applied to the product and the results -- there are eight samples. The range on these was from 1.8 to 4.01, and all of these exceeded one fiber per cc.
Q. And the third page?
A. The third page we have Libby 3 screened over a 20-mesh screen rather than a 14-mesh screen, and this also had the cyclone fines pulled and a binder was applied. There were eight samples collected. They ranged from 2.14 to 3.63, and all of them exceeded one fiber per cc.
Q. And then the fourth page?
A. The fourth page we have Libby 3 screened material with a 20-mesh screen and all cyclone fines were pulled, and the range on the eight results was from 1.66 to 4.04, and all of them exceeded one fiber per cc.
Q. Now, during all this testing that was done, were the observations made that there was very little dust visible while pouring?
MR. RESTIVO: Object to the form of the question.
A. There is a note – on each of these pages at the bottom there are additional comments that said along the lines that the material looked good and there was little to no visible dust while

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pouring. "No dust while pouring." "Little to no dust while pouring." This appeared to be clean material in terms of visible dust.
Q. But it still resulted in levels exceeding the then OSHA PEL and certainly today's OSHA excursion level?
MR. RESTIVO: Object to the form of the question.
A. Well, I'll say it the way I want, the correct way. I'm going to say they all exceeded – for the most part they exceeded one. I don't think any of these were less than one and several of them exceeded two fibers per cc, but the two fiber per cc is an eight-hour TWA, and there were no time weighted averages calculated.
So on an instantaneous or a 15- or 20-minute -- well, these were -- for the period of time that they sampled it did exceed two for the most part on nearly all of these samples.
Q. Let me hand you what has been marked as Hamilton Exhibit 15 and ask if you can identify that document for the record.
A. Yes. This is Report No. 67636 and it's dated January 6th, 1978, and I am the person that approved this. This was a simulated attic test

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from Weedsport again, and there were ten samples that were submitted.

According to the summary the results showed that nine of these samples exceeded the limit of two fibers per cc. This is a simulated attic test with Libby 3 and there are various changes to the Libby 3 that were made.

Q. Did the material that was tested come from various sources?

A. Yes. That's what made this kind of interesting. The material appeared to be manufactured pretty much the same way in different facilities. The first test set came from Omaha, the second from Trenton, the third from Dallas and the fourth from East Hampton.

Q. Was there one additional source?

A. I think the "W" is Weedsport. If anything began with a "W" means Weedsport, so you would have five different locations.

Q. And what was the range of results for all of this testing?

MR. RESTIVO: Object to the form of the question.

A. If you look at the range on all these, this is a Libby 3 screened 14 mesh unbound from

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five different locations. The range went from 2.1 – I'm sorry. – 1.07 to 8.55, and all of these exceeded one fiber per cc.

Q. I would like to show you what has been marked as Hamilton Deposition Exhibit 16 and ask if you can identify that document for the record.

A. It's hard to read it on the first page, but on the second page it says 67567 as the number. This is, again, simulated attic test samples from Weedsport and there were ten samples that were collected.

The summary says that all ten samples exceeded 4.5 fibers per cc of air. This is – according to the notes here, it's an simulated attic field test with screened Libby No. 3 and it's screened over a 14-mesh screen with all cyclone fines removed.

Q. And what was the range of the levels in this testing of Libby 3?

MR. RESTIVO: Object to the form.

A. The range of the numbers appears to be 4.8 at the low end to 12.83 at the far range. So just between 4.81 and 12.83.

Q. At the time – by the way, when this testing was done, did OSHA have an excursion limit

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at that time?

A. You know, it's been so long since I've looked at this. It might have had one like five, but I don't recall. It's been too long. Sorry.

You have to understand I don't do asbestos work now. It's been probably since 1987. I don't do asbestos work anymore and my company does not insure to do asbestos work, so we don't do it. We refer all that work to other companies, so I'm really kind of rusty on what the standards were in 1977. I suppose a little bit of research would refresh my memory on that.

Q. I would like to show you what has been marked as Hamilton Deposition Exhibit 17 and ask if you can identify that document for the record.

A. This is No. 67691 dated April 6th, 1978, and this is an evaluation of samples that were considered to be what is known as super clean simulated attic tests. There were 33 samples that were collected and submitted on this request form, and according to the summary it says three samples had more than two fibers per cc, and this says West Chicago, Libby No. 1.

Q. What was super clean zonolite attic insulation?

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A. I'm not real sure exactly what super clean was, but from what people have said to me that I can recall there was some cleaning that was done of this material prior to expansion at Libby. And I may be completely wrong on that, but it seems to me that's what the clean was, and this, I believe, was a development that Julie Yang might have come up with where they were trying to clean the material prior to expansion through a special air-stripping process.

Now, that's the way I recall it in my memory from years and years ago. It's been 25 years since I've looked at this, but it seems to me that that's what it was, an air-stripping process to clean the vermiculite prior to expansion.

Q. To your knowledge was this material that was tested here being marketed and sold?

MR. RESTIVO: Object to the form of the question. Also object on the lack of knowledge.

BY MR. TURKEWITZ:

Q. Let me ask you this: Was this production material that was being tested?

MR. RESTIVO: In Exhibit 17?

MR. TURKEWITZ: Right.

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A. I don't ever recall super clean material ever going into production as a standard product.
Q. In looking at the test results on Page 3, are there results during cleanup of the material?
A. Here it is, cleaning up. There are cleanups that occur.
For example, on Page 1 it says there was a sample there. It says: Cleanup, rebagging, Sample 151SC-3 and 4. That would be South Carolina.
Q. Super clean?
A. I'm sorry. Super clean, 3 and 4.
Q. On the first page is it referring to the pouring of the material?
A. Yes. It says pouring of the material. It's interesting they say: Material quite dusty and dirty during cleanup and rebagging.
Oh, I see. They rebagged the material apparently and they got some dust generated at that time. But these first samples are from the first three sets they are pouring and fill. Samples 7, 8, 9 and 10 were cleaning up the material.
Q. What was the range of the results for

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the super clean Libby 1?
MR. RESTIVO: Object to the form of the question.
A. We're looking at Samples 1SC-1 through 1SC-10, which would include pouring and cleaning up, and the range was from 0.19 to 1.10.
Q. And the 1.10, what was the activity taking place?
A. That was during cleanup.
Q. And then turning to the next page, is there another set of test results with this report?
A. Yes. This would be samples that begin with a 2SC-1 through 2SC-12.
Q. And what material was being tested there?
A. This is super clean simulated attic test for Libby No. 2.
Q. And what was the range of the test results for super clean Libby 2?
MR. RESTIVO: Object to the form.
A. It ranged from 0.22 to 1.35.
Q. And how many of those samples — how many samples were analyzed?
A. There were 12 total.
Q. How many of those exceeded the current

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OSHA excursion level?
A. Five of them were above 1.
Q. Is there another report attached?
A. Yes. There is another report attached. It's 67692 dated April 6th, 1978, and these were samples of super clean Libby No. 1 and Libby No. 2 taken in the Weedsport attic test.
Q. What was being tested there during that testing? How was that testing performed?
A. This was super clean attic test for Libby 2. The first tests were Libby 1. I believe this was, I believe, a repeat of the first set of tests just doing super clean Libby 2. Some samples were collected outside the attic area before the test was taken, before there was any simulation, and then they repeated the pouring and the cleanup.
Q. And what was the range of the results for Libby No. 2 super clean?
A. These ranged from less than 0.06 to a high during cleanup of 1.5 — I'm sorry. I'll have to check to see what Sample No. 5 is, but the high was 1.58. So the range was less than 0.06 to 1.58.
Q. Where were the highest levels found?
A. The highest level was 1.58 and it says that this was seen as SCE-2. 1SCE-3 and 4, let's

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see what that is.
I think this high level here, it says 1SCE-5, the same as SCE-2 taken with personal Sample 1SCE-3 and 4. This would be pouring fill. And then the next one is 1.35 taken with personal samples 1SC-5 and 6, which again is pouring fill.
Q. Turning your attention to the fourth page of this document, what does it state in the note down below?
A. Is this the page you're on?
Q. The page before that.
A. It would be that page?
Q. Yes, sir.
That's super clean simulated attic cleanup L1; is that correct?
A. Correct.
Q. And what does it state in the note down at the bottom?
A. The last sentence or the whole note?
It says: These samples were taken while shoveling up Libby 1 attic fill and putting it into 4-cubic foot plastic bags. The attic window was open and exhaust fan on during cleanup. Ten shovel per 4-cubic foot bag per minute - 15 seconds. There appeared to be more dust

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generated cleaning up this material than any previous screened L-1, 2 or 3 unbound.
Q. And what was the highest level found during the cleanup?
A. 1.1 fibers per cc.
MR. TURKEWITZ: Why don't we take a break then.
THE VIDEOTAPE SPECIALIST: This concludes Tape 1 of the videotape deposition of Thomas Edgar Hamilton. The time is approximately 12:35.
Off the record.
(Lunch recess taken.)
THE VIDEOTAPE SPECIALIST: Back on the record. This is Tape No. 2 of the videotape deposition of Thomas Edgar Hamilton. The time is approximately 1:30 p.m.
BY MR. TURKEWITZ:
Q. Mr. Hamilton, prior to taking our lunch break we were talking about the simulated attic testing that was conducted by Grace in the 1970's, and were any goals established for the simulated attic testing?
A. I don't think they did anything at Grace without something like this where they spent

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a lot of money without a goal. I think the work that was being done by Fred Eaton was to first determine what levels of release of fiber release would we see with attic products in actual use, and then his assignment was to see if there were products that could be used to amend the vermiculite to bind the fiber to see if a new product would be developed that would not have any fiber release, so it would have a very low fiber release during the use in an attic at the consumer level.
So the answer to your question, I think there were goals, and I think those goals were quite straightforward. It was to figure out what we have and figure out what can be done to make the product better.
Q. Were any air standard goals established while you were there?
A. During my employment there we did have air standard goals that we looked at, not only for -- asbestos would be one product. There were many other chemicals for which we established at Grace what we call a GIL or Grace Internal Limit.
Within Construction Products I was aware of the fact that at the manufacturing level

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they were looking for a goal of the lowest achievable level, but it specifically was looking at levels down around .1. Getting down to .1 and lower was really a goal that amounted to a large investment.
I have to say that they were quite successful at it, too. You know, when you look at success stories, that was one of them. I think that the engineering group at CPD had some innovative ideas for lowering fiber levels, exposure levels, in the plant and at Libby, and I've even had people from NIOSH mention to me that they had been to Libby -- NIOSH being the National Institute of Occupational Safety and Health in Morgantown, West Virginia. They mentioned to me how creative and how well the ventilation systems were designed.
So the answer to your question is we had goals, and those were important always to establish where do you want to be in terms of fiber levels in the plant, and I think Jack Wolter was probably one of the catalysts. He was of the managers of production that set the goal for the engineering group and for the plant managers, and they did a pretty good job of meeting of that goal

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of getting down towards .1.
Q. And that was in the plants?
A. That was in the manufacturing plants. Correct.
Q. Did you ever run into problems with any occasion of any type of fiber release or fiber release episodes in the plants?
A. Yes. I would say that over the years the plant managers and the people from Health and Safety group got very good at identifying what types of events would create a fiber release in the plant that would be unacceptable. Certain things like port pressure on the bag house -- you know, if the pressure got too high across the bags means that you're not getting enough air through and you get a degradation of air capture on the expander unit; the changing of the bags and how often to do it and what levels worked.
Another example would be a spill in the plant. You know, if a spill occurred, a bag of vermiculites got ripped or was ruptured, the employees had to clean that up right away. They had to stop what they were doing and clean it up essentially, because if they didn't this could create a source of fiber exposure in the plant.

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There were certain techniques that the employees had to do, certain stoner settings. The stoner is how they separated the product from the stone. After it was expanded it went over this thing called a stoner, and it's very important to have that adjusted properly and have all the ventilation working there.

So the answer to your question is yes; we had techniques that we used that we all began to understand that if you did it a certain way, you could achieve very good acceptable levels of exposure within the OSHA limits in the plant.

Q. You mentioned the breakage of bags.

Did that ever occur with bags of zonolite attic insulation?

A. Yes. I wouldn't say it was a common occurrence, but it did happen.

Q. And what were the results?

A. Well, we knew that if that bag -- when that bag burst that there would be a fiber release, and it was very important that the forklift operator or the plant people that were there not drive through this loose vermiculite on the floor; that that bag had to be -- that spill had to be cleaned up and the bag had to be repaired.

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Q. What would happen when that loose material was disturbed?

A. We would begin to see elevated fiber levels in the plant as a result of that. That was pretty well known. I mean, we had duct tape and materials in the plant that were readily available in case of a break, and employees were trained if there is a break in the bag, fix it right away.

Q. Were air standard goals established for end use or products' end use?

A. Not that I'm aware of.

Q. Now I would like to talk to you a little bit about actual attic testing. You referred to it earlier.

Are you familiar with the actual attic testing that was performed at W.R. Grace?

A. I'm familiar with it as a result of the request for analytical services that came through my desk, were signed by me or authorized by me, or I was copied on the report of the simulated -- of the actual attic test, not the simulated -- well, the simulated ones always came to me and then they started doing the actual test, and on occasion -- I think most of those came across my desk.

Q. And to your knowledge what was the purpose of the actual attic testing?

A. I think that there was an understanding that the simulated tests were okay, but that the simulated tests don't mimic or match exactly what would be seen with various types of attics that might be available to put vermiculite in; that if we didn't -- if we didn't do some testing that actually was real testing, then all we would have is simulated testing, and I think that there was some concern that it was important to find some attics and actually go out and test in homes and attics to go beyond what the simulated tests were showing.

Q. I would like to show you what has been marked as Hamilton Deposition Exhibit 18 and ask if you can identify that document for the record.

A. Yes. This is a 67565 dated July 11th, 1977.

Q. Is that your name at the top right corner of the --

A. Yes. This is approved by me.

Q. And what type of testing was conducted?

A. This is -- I'm going to read the summary.

"Six attic test samples were received from Savannah, New York, and evaluated. Sample 18AS-PR 2 was extremely dusty and impossible to read with any accuracy. The other five samples all showed fiber counts of greater than 7.5 fibers per cc of air", and this is an actual home attic fill job, Savannah, New York, and it involved the pouring of attic fill. All test materials screened, Libby No. 3, 14 mesh with all cyclone fines removed.

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Q. Let me direct you to the third page -- the fourth page.

A. The handwritten --

Q. The handwritten notes.

A. Yes.

Q. Does it mention when the bags were taken up to the attic?

A. Yes. It says on Note No. 6 that all 24 bags were taken to the attic before conducting testing.

Q. When a homeowner installs this material, would a homeowner be going back and forth with bags to your knowledge and would the whole entire job involve going back and forth bringing bags up and installing it?

MR. RESTIVO: Objection to the form of

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the question and lack of any personal knowledge as to what a homeowner would do.

A. A homeowner would have to take the bags from whatever vehicle they transported the bags in. Perhaps the bags were delivered to their home. Those bags would have to be moved to their attic. Those bags would have to be placed in the attic and then opened. The material would then be spread out either by pouring it and walking with it or by spreading it with some kind of device, a spreading device.

The empty bags would then have to be collapsed and removed from the attic. That procedure is a standard procedure that you would have to do. There is no other way to put it in there. This air monitoring was done only during the time period when the material was poured from the bag.

Q. It did not include the time in which the homeowner is bringing bags up and down and collapsing the bag?

A. As I understand it, no. This is only done during the actual pouring.

Q. Did it include the spreading of the material?

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MR. RESTIVO: Objection; lack of personal knowledge.

A. According to the Air Sampling Record Sheet, the air monitoring was done during the pouring only.

Q. And let's look at the range of fiber levels that occurred just during the pouring itself.

What was the range, can you tell?

A. This is very, very difficult to read. My copy is very obscured.

I've attempted to read this, but I just can't quite make this out. I think that the first one, Sample 18AS-PR 1, I believe that was 7.9.

Does it appear like 7.9 on your sheet?

Q. I believe that's right as far as I can tell.

A. The second sample I cannot read.

Q. Does that appear to be 11.22?

A. Are you looking at Sample PR-3 or PR-2?

Q. I'm looking at 3.

A. I think PR-2 was too dusty and impossible to read with any accuracy.

If you look at the summary, it says

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PR-2 wasn't readable. It was dusty. So the PR-3 looks like 11.22. The Sample PR-4 looks to me like 9.68. 5 looks like it could be either 8 or 3.27. I can't read it. And PR-6 looks like 8.5.

Now, I think that PR-5 was actually 8.27 because in the summary it says that all of the samples were greater than 7.5.

Q. And obviously all of these samples would have been greater than the current OSHA excursion limit of one fiber per cc; is that correct?

MR. RESTIVO: Object to the form.

A. That's correct.

Q. And this is in an actual attic; is that correct?

A. Yes. It says this is an actual home attic fill job.

Q. Let me show you what has been marked as Hamilton Exhibit 19 and ask if you can identify that for the record.

A. Yes. This is No. 67706.

It's dated May 12th, 1978, and this is a super clean actual home attic fill test from Savannah, New York, and this is of Libby No. 1.

Q. Is that your name in the upper right

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corner? Strike that. I mean on the bottom right.

A. Yes. A copy was sent to me. Mr. Eschenbach approved this and an additional copy was sent to me. And the summary explains that there was heavy loading of dust in the cassettes, and Harry Eschenbach advised that loose dust should be evaluated as total dust, and so that the -- then they just did what we call a gravimetric analysis of the dust where he weighed the dust. And under Data Analysis it says: Samples of residual dust trapped in the filter were counted in the regular manner.

Q. And what was the range of fiber levels in this test?

By the way, what type of material was being tested here?

A. This was super clean Libby No. 1.

I think it's important to note that what they did was they removed the dust from the cassettes and weighed that, and what was left on the cassette was then counted for fiber, because they had to get the dust off the cassette in order to count the cassette. That might not have been clear when you read this. But the dust on the cassette was too thick. They removed the dust that

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will come off and they weigh that; and the dust that's left, the residual on the filter, is then counted for fiber.
Q. So the count that we see on the second – the last two pages, would that be an underestimate of the levels, airborne levels, that was found during the – present during the testing?
MR. RESTIVO: Object to the form of the question.
A. I would answer that question by saying that because dust was removed from the cassette and no fibers were counted from that dust, that these numbers here would represent an underestimation of the total fiber that was there. They would have to because residual dust was removed from the cassettes prior to doing the counting.
Q. And where was this testing performed?
A. This was tested in Savannah, New York.
Q. And what were the levels – what was the range of the airborne levels that were counted on the dust that was remaining on the filter?
MR. RESTIVO: Object to the form of the question.
A. There were 12 samples that were collected during the pouring of fill, and the

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results ranged from 0.81 to 3.89.
Q. And of the 13 samples, how many of these samples exceeded two fibers per cc?
A. There were 12 samples and ten of them exceeded one fiber per cc.
Q. And how many exceeded two fibers per cc?
A. Six of them exceeded two fibers per cc.
Q. Now, in the testing that was performed, how long did it take for them to do this actual installation?
A. Well, it says that 50 bags were placed in the attic, and it looks like by three men in 45 minutes. So if we want to talk in one-person units here, it would be about 135 minutes for one person to put 51 bags into the attic. The actual pouring was monitored between 1333, which is 1:30, through 3:44, which is 1544. So from 1:30 to 3:30 would be two hours. This was a little over two hours of time for the pouring of 51 bags.
Q. And does it mention –
A. I'm sorry. Poured 49 bags.
Q. Does it mention whether they had completed the job?
A. No. Note No. 6 states that the tests

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completed at end of 49 bags due to working conditions. We require approximately 60 more bags to complete attic overfill.
This attic already had insulation in it, and this was just putting an overfill on top of it.
Q. Is this measuring the time of just the time of pouring the material?
A. I'm sorry. Could you repeat that.
Q. The activities that were being measured, was it the pouring of the material?
A. According to the notes here on the sampling record, this only involved the actual pouring of the material, and then on what we call Sample No. 14 and 15 – I'm sorry. 13 and 14. It says they poured five bags and brought down empty bags and lights.
Q. If it took three people approximately two hours to do this job, then do you have an opinion as to how long it would take for this job one person to do?
MR. RESTIVO: I'm going to object to that. I don't think that's what the witness testified to. I think he testified that it took three men 45 minutes each.

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I would ask you to rephrase your question. I'm not sure whether you're referring to his prior testimony or not.
BY MR. TURKEWITZ:
Q. You testified it took between 1:33 to install 49 bags – it took them from 1:43 -- 1:33 to 3:44, and that's a little bit over two hours.
A. That's two hours and 11 minutes to install 49 bags.
Q. And that's three people doing that?
A. That's what it appears to be, yes. Correct.
Q. And they were only halfway through with the job?
A. He said that it would take 60 more bags, so they were less than halfway through.
Q. Do you have an opinion as to how long, based on that, one person to complete this job?
MR. RESTIVO: Object to the form of the question. Also object to lack of foundation.
A. The problem that they had in this attic was that after the act of pouring 49 bags into the attic resulted in working conditions which were unacceptable to the employee. They had to leave and wait for the attic dust to settle before they

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could go back up and finish the job. That's what this appears to me to say.

Now, to answer your question, if in two hours and 11 minutes you create a dust level which is unacceptable for working conditions, then this job would take more than three man days to complete.

Q. And if you were to apply the OSHA PEL of two fibers on an eight-hour time weighted average to this job, do you have an opinion as to whether this job exceeded the OSHA PEL two fibers on an eight-hour time weighted average?

MR. RESTIVO: Object to the form of the question.

A. Well, it just so happens I'm probably the most qualified person in this room -- I'm probably the most qualified person at W.R. Grace to answer that question, and the answer is yes. These people would have been exposed potentially above the OSHA PEL if they attempted to complete this job in an eight-hour day.

Q. And did they stop this job so that they would not go over the OSHA eight-hour time weighted average standard?

A. No. They stopped this job because they

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couldn't work in the attic anymore. It was too dusty.

Q. Sir, I would like to show you what has been marked as Hamilton Deposition Exhibit 20 and ask if you can identify this document for the record.

A. This is No. 67707 dated May 12, 1978. It is a super clean actual home attic field test conducted at Savannah, New York. The products involved were Libby 1 and Libby 2.

Q. And was this material being tested also super clean attic insulation?

A. That's correct. This was a super clean actual home attic field test.

Q. And what were the results of those testing?

A. These are similiar to the previous ones where the fact is that there was so many dust in the cassettes that they had difficulty reading the cassettes. Harry Eshenbach advised that the loose dust be evaluated as total dust. The fibers were then counted in the remaining cassettes.

I would like to point out something in Exhibit 19 that I meant to mention. If you go to the third page of Exhibit 19, which actually it

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says Page 2 at the top, the total dust levels that you see in this column are very high. The allowable level of dust under the OSHA standards at the time for total dust was 15 milligrams per cubic meter. Six of the samples exceeded that PEL.

So not only were we exposed above the permissible -- I believe if they had stayed in the attic for any longer, maybe the whole day, they would have been exposed not only above the permissible exposure limit for total dust, but they would have been exposed above the allowable level for asbestos at the time.

Now, going back to Exhibit 20, we had the same problem with the dust, and on the third page of the exhibit we have the total dust results for these cassettes. This is a very high level.

I should also point out that when you approach 15 milligrams per cubic meter the visibility in the air drops to approximately three to five feet. That's all the farther you could see through that dust level. Those samples, the dust was removed and then they were counted for asbestos fiber. This is super clean Libby No. 2 and Libby No. 1.

Q. Can you read the results on that, or is

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it hard to read?

A. No. I can see the results. I'm looking at Sample SC2-1R through 4R. This was super clean Libby No. 2, a total of 24 bags. The results ranged from 0.88 to 2.37, and three of the samples were above 1.

Q. We were talking about the OSHA standard earlier.

While you were at Grace do you recall any discussions about whether it would be appropriate to apply the OSHA standard to families working with zonolite attic insulation?

A. Yes. The use of OSHA standards is very clear that it is not applicable to the nonwork environment. We do not apply OSHA standards to homeowners, to children, to elderly. They were designed for the healthy worker exposure, a healthy worker. In this case these standards were originally designed for healthy men, and most people that talk about these standards will admit that's what was really in their minds because that was really what we had exposure data available from.

The use or the application of an OSHA standard to a child or to an elderly person or to

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the nonworking environment is not an acceptable practice in the world of industrial health or occupational health or public health, and there are reasons for this. Those standards are not designed for children. They're not designed for elderly. They're not designed for people who have a preexisting condition, some preexisting condition such as – say, for example, asthma, which is an obstructive lung disease. You wouldn't want to expose people to high levels of dust if they have a preexisting lung disease. So people with asthma don't work in dusty jobs.

Q. Did you ever speak out about applying OSHA to consumer products that were applied by families?

A. We discussed – within our department we discussed these types of things on occasion, because it was problematic and we knew that. But there were many products that were sold by Grace to consumers, and over the years we had to evaluate whether or not the type of exposure that would occur during any use of those products would present an opportunity for an exposure which could be harmful to the end user.

We discussed this throughout the entire

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spectrum of Grace products, not just CPD, but of course there was always that concern in the Health and Safety Department that if you did have levels that were exceeding OSHA standards, you had a problem whether or not you were exposing a contractor who would be an employee of some company versus a homeowner.

The types of levels that we were seeing with the attic products represented an exposure profile which was exceeding OSHA standards, and therefore it represented a problem for anybody who used it, not just a healthy worker.

Q. Do you recall discussions while at Grace about NIOSH and its position that there is no known safe level of exposure to asbestos?

MR. RESTIVO: Object to the form of the question.

A. Yes. Actually that all started with Dr. Selacon and his position on asbestos, that one fiber could cause disease, which is about as far out on the edge as you can get.

The fact is we did discuss the NIOSH document. When that was published we all looked at it, we all read it, and immediately began to formulate a plan for addressing that within the

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context of the tremolite that we were seeing not only in our products but in our plants at CPD.

Q. Do you recall NIOSH proposing .1 or .2 as a permissible exposure limit?

A. Yes. They call it a Recommended Exposure Limit or an REL, and that number appeared very low to us at the time it came out, because we were struggling to meet the two fiber per cc limit at the time.

Q. Did W.R. Grace perform air testing in homes after installation?

A. You mean after the installation of zonolite attic insulation, did they do testing in homes?

Q. Yes.

A. I believe they did, yes.

Q. What type of testing did they do?

A. It would be the same type of air monitoring that was used here where it was being evaluated for asbestos content by phase one microscopy.

Q. Was it done during disturbance of the material?

A. No. They would not have disturbed the material and then done testing.

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Q. Do you recall any discussions about that testing?

A. I do recall discussions about this in that the testing of a home that had attic insulation in it, if you just collect a sample and don't do any disturbance of the material, then you really don't have an understanding of what potential exposures could occur during a disturbance of the material. And a typical disturbance of the material could involve many different actions, such as a homeowner going up and laying a floor in their attic to store things in their attic, a homeowner storing things right on the vermiculite itself. That would be a disturbance of it because then it could be tracked into their home. The installation of a new lighting fixture in the ceiling, the installation of new wiring in the home, the installation of a heating system, the installation of an air-conditioning duct or vent, the installation of a TV antenna.

There are so many times when a homeowner may go into their attic and there are so many times when opportunities could occur for disturbance of the material. Also, the material

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was very fine in some cases. If you found a hole in an interstitial wall space, it would just fill the cavity; and if a homeowner were to do any disturbance of that wall, like remodeling of the home where you remove a wall from this position to another, remodeling I think probably represented the most opportunity for a spill and an exposure of the loose vermiculite from the attic into their home.

All of those situations were ones that I thought about and that I did talk about with people in regards to is there going to be any thought given to these types of activities which could occur and what types of exposure may occur at those times.

Q. And what was the response that you got when you gave your thoughts to do home testing?

A. Well, these were more just ideas that we were proposing. Sometimes this would be at lunch talking to people from Construction Products Division or within our division, and sometimes even the attorneys. We had lunch with them quite a bit. And the fact is these would just be discussions that we would go around the fringes of and say: Gee, you know, this might represent an issue, but

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it never was formalized in writing. That would have been a problem to put that in writing.

Q. Why would that have been a problem to put that in writing?

A. Well, you know, the corporate culture just didn't tolerate that. Anybody that really spoke out about this issue had to be careful, had to be very cautious how they said it and the way they said it, because if they weren't careful they would be told: We don't write about that or we don't talk about that.

Q. In general what was Grace's attitude towards safety?

MR. RESTIVO: Object to the form of the question.

A. If you don't mind I'm going to expand your question just slightly and I'm going to say: What was Grace's attitude towards health and safety?

Q. Let me rephrase that.

What was Grace's attitude towards health and safety?

A. The generalized attitude, the one that I felt was the more prevalent, dealt with making sure that we met the requirements of the OSHA

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standards. That was important. And when we weren't in compliance with OSHA, that then was dealt with, and it was always a very good response from managers when we weren't meeting OSHA.

Any time that we tried to go beyond OSHA it was not done. I really can't think of a lot of instances where we said: Gee, the OSHA standard is -- I'm just going to pick a number -- ten, but at Grace we're going to use five. It just didn't happen.

And within some of the divisions -- for example, Polyfibron Division, the engineering manager there was probably -- he was just impossible to work with. If it wasn't an OSHA standard, it wasn't going to get done. No money was ever going to be spent unless they were required to spend it, and I didn't see that attitude within the Construction Products Division.

Remember, this is a corporate culture and there were many divisions of Grace. Within Construction Products I felt that the attitude about health and safety was taken seriously, and I believe just because of who I dealt with -- I believe that Jack Wolter probably was the catalyst for getting a lot of this done. I think

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he really cared about making sure that the employees were not harmed, and when he came in to Grace it was right at the time when -- he kind of set the goal for getting the plant and keeping it in compliance, and they did it.

So I would say that the corporate culture within Construction Products was pretty good in terms of trying to get the manufacturing plants in line with the OSHA standards, but to expand that to the entire corporation, you probably would have to do it division by division and look at who was there. Some of the divisions did not have big problems. Like Dewey & Almy just didn't have major problems in terms of compliance.

But I would say this: From the standpoint of Health and Safety we had a small department and it was hired to keep track of everything that was going on there.

THE VIDEOTAPE SPECIALIST: Off the record. The time is approximately 2:00 p.m.

(Discussion off the record.)

THE VIDEOTAPE SPECIALIST: Back on the record. The time is approximately 2:03 p.m.

BY MR. TURKEWITZ:

Q. Did you ever do a study comparing

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Grace's health and safety program with other companies in the chemical industry?

A. Yes. I conducted that study in mid 1980's because I felt as though, after talking with my peers, other managers in industrial hygiene and so forth in other companies, that our program was in what I call fire-fighting mode. We weren't being proactive; we were being reactive, and the reason we were being reactive is because we were understaffed. And I felt that way for quite awhile, and it was at that time that I started a study of chemical companies.

So I selected the top 20 chemical companies in the United States. I then called my equivalent there, the manager of industrial hygiene at those companies, and I interviewed them to determine how were they staffed, how did they handle equipment, how many managers did they have, how many technicians did they have, what types of programs did they have in place, how did they handle their medical records and all their hygiene records. Were they computerized? It was a nice circuit. I then presented this in a spreadsheet to our management.

Q. And how did W.R. Grace compare to the

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other chemical companies with respect to its health and safety program?

A. Well, pretty much in every category we were at the bottom of the list in terms of the number of people we had, the budget that we had, the amount of equipment we had.

We certainly were deadlocked when it came to computerization of records. We really didn't have any central computerization of records at all, and we also were at the low end in terms of salary. I actually did a salary survey at the same time.

Q. Now, we talked earlier about the problem of asbestos contaminated dust on surfaces, and I would like to show you a document that has been marked as Hamilton Deposition Exhibit 21 and ask if you can identify that document.

A. This is dated March 20th, 1984, subject: Talc Removal - Cambridge. This was a talc removal specifications and sketches showing areas to be cleaned within the Cambridge facility. It says here to clean talc dust from Building 29 and Building 23.

Q. Let me refer you to — I guess it's the — by the way, are you copied on this document?

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A. Yes, I am.

Q. And this is dated March 20th, 1984?

A. Correct.

Q. And you were the manager of industrial hygiene at that time?

A. That's correct.

Q. And turning to the fourth page, that page is entitled "Building Interior Cleaning Specifications".

A. Correct.

Q. That's the fifth page. I'm sorry.

And it states under Background Information: Although Building 29 is basically clean, talc remains in some floors area, beams, pipes, light fixtures and equipment. Before partial demolition of Building 29 can be initiated all remaining talc and other forms of particulates must be removed. This building interior cleaning requirement is necessary to prevent or reduce to the maximum extent possible fugitive emissions to the atmosphere during demolition.

Did I read that correctly?

A. Yes.

Q. What are they referring to? What is being removed?

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A. The talc in Building 29 was used to coat latex balloons. These were weather balloons that were manufactured there in that plant. After the latex balloon was made they would coat it with talc, and there was a lot of talc there loose on surfaces that had settled and had never been removed. There were ducts, say, eight-inch ducts, that were half filled. The entire run of the duct was half filled with talc.

Q. The next paragraph states: The owner has determined that the waste talc remaining in Building 29 contains a contaminant of .05-2% Chrysotile fiber up to 20 micrometers in length.

Did I read that correctly?

A. Yes.

Q. Is that accurate?

A. I don't believe it is. I believe what they meant to say was tremolite instead of Chrysotile.

Q. And why do you believe that?

A. Because the talc doesn't contain Chrysotile asbestos. It contains tremolite forms of asbestos.

Q. And turning to the next page, under the Scope of Work it has a section on applicable

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regulation; correct?
A. Yes.
Q. And it states: The contractor shall comply with all applicable city, state and federal regulations as they apply to waste talc removal and disposal. Talc waste is not classified as a hazardous weight. This waste is also not regulated by the NESHAPS for asbestos as the waste does not contain commercial asbestos. Owner believes contractor must comply with OSHA asbestos standards, and I left out -- I just put the acronyms for OSHA and NESHAPS.
Did I read that correctly?
A. Yes.
Q. And did Grace go on to hire a contractor to remove the asbestos-contaminated talc following certain abatement procedures?
A. Yes. This entire abatement procedure was done -- this entire procedure was done as an asbestos removal project, done just exactly the way that would be done.
The entire specification here, isolating with poly sheeting, having entrances and exits just for the contractors; they have to remove protective clothing and change; they have to have a

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change area; they have to have a ventilation to maintain negative pressure in the area; they have to vacuum. They can use a wet method if they want. They have to collect it all, wet it, put it in bags. It's considered clean when there is no dust left and the owner was going to -- the owner will air monitor all areas outside that for asbestos fiber.
This was actually done just as you would do an asbestos fiber cleanup, asbestos removal clean-up type job.
Q. And turning toward the end of the document, five and six documents from the end, does it describe the amount of asbestos in the talc and the Grace instructions to the builder?
A. I want to make sure I'm on the same page.
The work to be done by Dec-Tam Corporation?
Q. Yes.
A. Yes. On that page --
Q. What is that document, by the way? What is that page?
A. This is a quotation. This is a vendor quotation to W.R. Grace by Dec-Tam Corporation.

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This is a quote only to do the work that was work that was requested in the documents, and they say on here "talc may have minute traces of asbestos. Removal must conform to all EPA and OSHA regs."
Q. And was that work actually performed?
A. Yes, it was.
Q. Let me show you what has been marked as Hamilton Deposition Exhibit 22 and ask if you can identify that document for the record.
A. Yes. This is the letter from Environmental Solutions, Inc., dated August 15th, 1984, and they are submitting their bid to do the work for the removal of the talc.
Q. And does it also discuss the cleanup of vermiculite from Building 23?
MR. RESTIVO: I'm going to object to the form of the question. I don't think you've established whether the witness ever saw this document before, so I object to the form of the question.
A. There is a comment in the third paragraph which says: Most of the material present is vermiculite which remained after the demolition of the evidence.
Q. Does it state: Upon completion of the

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work in Building 29, the oven area in Building 23 will also be vacuumed cleaned?
A. Yes.
Q. And they're referring to the vermiculite that remained after the demolition of the ovens?
A. Correct.
Q. Why were they vacuum cleaning the vermiculite?
A. Well, this area needed to be cleaned because they were going to demolish it and put in offices in that space. They were going to rebuild it and construct it to put in offices.
The fact that there was vermiculite in there which we knew was Libby vermiculite necessitated that this be vacuumed up with HEPA vacuuming, and the removal of the talc -- removal of the talc contained some tremolite forms of asbestos, so it just made sense to combine the cleanup of Building 23 with 29 because the contractor was already there with all the appropriate equipment to do this.
Q. Were you familiar with this work that was done?
A. I was familiar with the fact that it

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was going to happen and I was familiar with the specifications that were written because I was copied in on the specs.

Q. And was the vermiculite vacuumed using a HEPA vac?

A. Yes, it was. It was done – I believe it was done by Environmental Solutions. I believe they got the contract and they came in and they did it all with HEPA vacuums.

Q. I would like to show you what has been marked as Hamilton Deposition Exhibit 23 and ask if you can identify that document.

A. This is a letter from me to Mr. Wightman dated 23 August 1984 with carbon – with copies to several of the Grace employees who were involved in this building, Building 5.

Q. And what is this memo discussing with respect to Building 5? Is this memo discussing a problem with asbestos dust?

A. Yes.

What had happened is we had had asbestos lagging removed by a contractor. There had been some piping in Building 5 that asbestos on it, and we had to have it removed.

The contractor did not do a good job.

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They had left some asbestos on the floor and on surfaces in Building 5. This was discovered by Larry Maglin, who was a technician in the CPD laboratory working for Julie Yang, and he wrote me a memo saying that he had discovered this. My response to him was to write this memo telling him that it had been inspected, and this was after an intensive cleanup had been done.

What happened was once they found this, they called the contractors back in and said hey, you missed. The contractors then did a complete cleaning of the area. We then went in and did an inspection and then I wrote this letter saying we did an inspection and everything was clean.

Q. So the asbestos dust was HEPA vacuumed in this area?

A. Yes.

Q. Mr. Hamilton, in general from the testing that we've reviewed and the testing that you're familiar with with respect to zonolite attic insulation, how would you describe the airborne levels that resulted during the simulated and the actual attic testing?

MR. RESTIVO: Objection.

Do you intend to call this witness as

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an expert witness? Because I think you're asking for opinion evidence.

MR. TURKEWITZ: Let me rephrase that question.

BY MR. TURKEWITZ:

Q. Mr. Hamilton, based on your knowledge and your experience with regard to the simulated and actual attic testing of zonolite attic insulation how would you describe the airborne asbestos levels that resulted?

MR. RESTIVO: I'm going to object because I think you're asking for an opinion evidence, unless you advise us whether or not you're calling Mr. Hamilton as an expert witness.

BY MR. TURKEWITZ:

Q. You can answer the question, sir.

A. The original testing that was done by Steve Venuti and me in Cambridge in the small room that we did the original attic testing, the testing of zonolite attic insulation, showed that there was a real potential for exposure for anyone who was disturbing free, loose Libby vermiculite. Those levels were consistently above one fiber per cc and ranged as high as 28.

Testing done by Fred Eaton in the

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simulated attic tests and in the actual home tests showed that in spite of the best efforts to clean the vermiculite, in spite of the best efforts to amend the vermiculite, that we never -- at Grace we never were successful in finding a way of installing zonolite attic insulation without having exposures above one fiber per cc. You can make it super clean and it's still above 1. You can put all the soap you wanted on it and it still wouldn't be below 1.

So if you were to sum up all this data, as you asked me to do in my opinion as a certified industrial hygienist who was involved in this on a daily basis and had reviewed and had all these documents on my desk at one time during my employment at Grace, the loose zonolite material from Libby has always – no matter what we did, always represented an opportunity for an exposure that was going to be high. Maybe just for a short period of time, but it would be high, and it would be measured in levels above one fiber per cc, and we never did find a way to reduce that.

Q. And based on the results do you have an opinion as to whether zonolite attic insulation can release asbestos fibers and cause contamination in

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a home after insulation?
MR. RESTIVO: Object to the form of the question unless you're going to call this witness as an expert rather than a fact witness.
A. In my opinion any time loose woody vermiculite, whether it's 1, 2, 3, 4, 5 -- it doesn't matter what size it is. Any time you have loose Libby vermiculite from an expander plant it will have an opportunity to release fibers into a home, although if it's just sitting in the attic and nobody is touching it, it's not going anywhere, but the moment any movement of that is done, any time there is any maintenance done, any time there is any disturbance of that material, whether it's a renovation or a demolition, there are opportunities for asbestos fiber exposures which exceed OSHA standards.
And I want to emphasis one more point. I do not believe that the application of OSHA standards to homeowners and to children has any basis in this study of the zonolite attic insulation. The application of occupational standards to a homeowner is just not allowable.
Q. Based on your testing at Grace did you form an opinion as to whether Grace should have

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continued to sell zonolite attic insulation?
MR. RESTIVO: The same objection.
A. Yes. After my first testing in 1976 with Steve Venuti I felt that zonolite attic insulation was a product that should not be marketed by Grace. I felt that it was going to create a lot of problems and could certainly expose thousands of people to asbestos needlessly.
There certainly were many other products that could be used for insulating a home besides zonolite attic insulation that didn't represent an asbestos exposure profile potential.
Q. Based on your testing at Grace did you form an opinion about the need for an asbestos warning label to go on bags of zonolite attic insulation?
MR. RESTIVO: The same objection.
A. Yes. I think I would use the word "unconscionable" if I were to describe the fact that there was no label on these bags to warn people that there was asbestos fiber in there.
The opportunity for exposure was clear. Zonolite had been marketed for many, many years before we even did the first test on it to actually show this. This product should have been labeled

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-- there should have been a warning for people to tell them that the use of this improperly would release asbestos fibers.
Certainly -- I mean, think about it. They should have at least said to people: Don't let your children go play with this stuff.
Q. Did Grace ever conduct testing to simulate disturbance of zonolite attic insulation after installation such as during renovations?
A. I don't recall them ever doing that.
Q. And based on your testing at Grace do you have any concerns about zonolite attic insulation in homes across the United States and Canada?
MR. RESTIVO: The same objection. Unless you add this fact witness as an expert, I object to the form of the question.
A. I think it's important that the people that have this material in their attic know that if they disturb this material, they could have an unnecessary exposure to asbestos. It just isn't necessary for them to do that.
If they're warned about this and they know that there is an opportunity for exposure, even above occupational limits, which don't apply

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anyway to this, that there is a duty to inform them and there is at least a very easy quick fix that will not involve them being exposed.
This material should be removed from attics appropriately. This should be done by professionals that know what they're doing. It could be done in a matter of minutes in most attics. Vacuuming inside of an attic with a vac truck would take one-hundredth of the time it took to put in, and it could be done safely. It could be removed in such a way that it would no longer represent an issue except for material that might have fallen down into an interstitial space, but in my opinion people that have this in their homes now should be warned.
Q. And what information should homeowners be told?
MR. RESTIVO: The same objection.
A. I think they should be told the truth; that if they don't disturb it, it won't be a problem. If they do disturb it, it will be a problem or a potential problem and it could create a high level of exposure over a brief period of time, but that potential is there, and what I call an informed -- an enlightened decision on what to

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do with it at least could be made.
We have millions of homeowners out there that don't know about this problem.
Q. Mr. Hamilton, do you have zonolite attic insulation in your home?
A. No, I do not.
Q. And based on your testing if you had zonolite attic insulation in your home what action would you take?
MR. RESTIVO: Object to the form.
A. If I had it in my home, I would have it removed.
Q. And why?
A. Because it would be very easy to do, it would not cost that much money to do it, and there are other substitutes for it that are just as good that do not present the asbestos hazard that this material does.
Q. At any point was your involvement with the Construction Products Division interrupted?
A. Yes.
Q. What happened?
A. I was called to give a deposition in a – specifically there were two events which interrupted my work with Construction Products

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Division.
The first involved a deposition that I was giving -- I don't recall the year. It had to be sometime in the early '80s. I would say 1981 - '82 – that era – where I was asked some questions in regard to product monitoring done by me in Grace facilities where I was actually monitoring products, not the manufacture of the product, but the end use of the product. And I answered the question honestly. I said yes. I gave descriptions of when I had done that.
The word that came back to my superior, Harry Eschenbach, was that "I had sold W.R. Grace down the tubes".
I asked Harry if he thought I had lied, and he said: No, you didn't lie, but you told them more than the truth. And I said – or something along that line, and I said: I never lied. I told the truth. And he said: Well, they think you sold them out, were his words.
Q. What kind of monitoring was that that you were doing?
A. The monitoring that I had done was some air monitoring in South Carolina operations in one of the maintenance shacks. They had sprayed on

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monocote on the metal coating in the interior and it was falling off, and there was some concern about the monocote that was falling on the equipment, the heavy equipment. And we did some air monitoring in there to see if there was any asbestos fiber as a result of this degradation of the monocote that had been sprayed, and we didn't find any; but when I was asked in deposition did I do that type of monitoring, I said yes to that.
There was some people at the Construction Products Division who were very unhappy that I had said that, and the word came down through my boss that I had sold them out, and I felt offended by that. And that was probably one of the first incidences of problems with CPD.
The second one was a little bit more catastrophic. I was in a meeting with the president of the division, several other members of the team that were involved with the air monitoring for schools. Lawsuits were coming in at a pretty good rate on a daily basis, and at that time we were trying to set up a program for responding to the lawsuits. I began to question – by the way, Harry Eschenbach was not there in that meeting.
I began to question exactly what

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protocols we were going to use and what was the reason for doing this. Because we were going to embark on a program spending literally hundreds of thousands of dollars for air monitoring, and I wanted to make sure that everybody understood what they were going to get for that.
After that meeting broke up I went back to my office and the phone rang, and it was the president of the division talking to my boss telling him that I was no longer to be allowed to work on Construction Products Division anymore; that I was to be taken off of that team and that Paul Conner was to be placed on that team. Paul Conner was my – an industrial hygienist who worked under me.
I then -- I took that news kind of hard, and I went over to Paul Conner's office and I shut the door and I told Paul that the only way to work for Construction Products Division was to go along. Don't fight it. Don't argue with those people. Don't even question what they're doing. Do whatever they want and it will be okay. Because he was worried about doing that job.
Q. What was the position that you were taking that caused the problem?

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A. I'm not quite sure exactly if I can recall all of the positioning that was done.

I questioned -- a little along the lines of this: That we were going to go into schools and monitor the schools that had sprayed on product in them, whether it was the acoustical material or the ceiling material, and it might even be monocote. And we were just going to walk into the schools and do monitoring with a team of people. We were going to put five hygienists in there and we were going to monitor the heck out of that building, and my comment along those lines was: What is that going to give us? What does that do for us? Don't you think we ought to do some tests to see whether disturbances of the material would create an exposure possibility?

My goodness, if the ceiling is all of our materials and are sprayed on stuff and we just take an air sample in the room, chances are that sample is going to look pretty good; but if we come into the room and do some damage to that and then monitor it, then there is nothing -- then we've got a case that this doesn't represent a health threat to the students.

My attempts to work in that area and to

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do those types of things were frowned upon, and I was not allowed to work on CPD anymore after that.

Q. Mr. Hamilton, was it conceivable to you while working on zonolite attic insulation issues that homeowners could go into the attic and disturb the zonolite attic insulation after installation?

MR. RESTIVO: Object to the form.

A. I don't think there is anybody that doesn't go into their attic at some time. I think if you ask that question of anybody, it's foreseeable that you're going to go in your attic; you're going to go in your attic. Everybody is going to go in their attic at some time.

If all you see when you walk in there is zonolite attic insulation, are you going to disturb that? The answer is yes. Is that going to create an exposure opportunity? The answer is yes. All of our air monitoring showed that. Every sample we did showed that there was an exposure opportunity.

You know, one fiber per cc is still one million fibers per cubic meter of air.

Q. And was it foreseeable to you that people would disturb zonolite attic insulation during renovations in their home?

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MR. RESTIVO: Object to the form.

A. I don't see how you couldn't disturb it. You have to disturb it if you're going to do renovations in your home. The moment you change a wall in your home, the moment you do something -- anything that disturbs that material and lets it fall, you have an exposure opportunity. It could be brief, but it's still there. It's still real. And the problem is homeowners don't know how to clean it up.

If you do have a spill of the material in your home, what is the procedure that a homeowner should use to clean it up? Should they go get a little spray bottle of water and wet it down before they do anything with it? Wel, that might work, but who is telling them to do that? Who is the person that is going to do that? Who is going to step up to the plate? It's probably going to be people like me who say it should be done, because I don't believe W.R. Grace is going to do it.

Q. Mr. Hamilton, why did W.R. Grace not test zonolite attic insulation during disturbance after installation?

A. You know, that's a good question

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because that very question got me into a lot of trouble.

I at one time attempted to call a meeting to do -- actually to discuss with the scientists from Construction Products Division disturbance of material. Now, it wasn't zonolite attic insulation, but it was another Grace product. And the lesson that I learned from that is that this is not an issue to be discussed. You do not discuss these issues. People didn't want to touch it. They didn't even want to go on the record that they were at the meeting. I had one person who called me and said: I'm not attending that meeting. I won't discuss that.

I believe I sent out a notice about that meeting.

Q. Were you interviewed by a reporter for the St. Louis Post-Dispatch?

A. Yes. I should say he called me and ask me a few questions. He didn't really interview me.

Q. And did the questioning involve zonolite attic insulation?

A. Yes, it did.

Q. And what did you tell the reporter about zonolite attic insulation?

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A. I think I should explain why that happened.

There is a health and safety user group on the internet, on Yahoo. I'm a member of that user group. After the 9/11 World Trade Center event there were some threats that developed. Do you know what threat is in the user group? It's where everybody talks about the same thing. You go online and everybody says the same thing and it's called a threat.

There was a threat that developed about the opportunity for tremolite exposure as a result of the use of Libby -- Libby vermiculite and the monocote that was sprayed on the World Trade Centers, and I saw that and it was going way off in the wrong direction.

For those of us that are in health and safety the World Trade Center represented an unbelieveable exposure to millions of people of dust that were a nuisance to us and somewhat toxic, and it was important, I felt, at the time that I read that not to get off on a bad track, not to go in the wrong direction, not to spend money on the wrong thing.

There was statements that the tremolite

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had been overlooked, that they weren't looking for this form of asbestos in the air and the EPA and OSHA -- it was sort of along the lines that they weren't doing it properly. And I responded to that that I had done monitoring of monocote on many occasions; that I understood how the product was made because I was in the plants where it was manufactured, and that the amount of tremolite that would be released from the World Trade Center would be unmeasurable. I didn't believe that monocote -- and I still don't today believe that monocote represents an asbestos or a tremolite exposure opportunity.

The MK3 products didn't have chrysotile asbestos added to them, so I'm only talking about the MK4 and 5 products. The fact is that I was trying to say to this person: Look, don't get lost on this tremolite issue because it's not a big deal. There are many other things that are bad. There was a million linear feet of fluorescent lighting, 15 pounds of mercury were released. You know, there were many other compounds that were released in the air that represented a toxic exposure profile, not tremolite. There was nothing wrong with that product. It worked well. In fact,

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I like monocote and I still do to this day.

This person responded back sort of along the lines that I didn't know what I was talking about, that there were many other people that felt that this represented a problem, and he quoted several sources.

I then responded back to that, continuing the threat by saying that in my opinion the monocote -- those people were not talking about monocote. They were talking about loose vermiculite. They're talking about Libby vermiculite that is loose fill material and that that did represent a problem in my opinion because I was involved in testing of it. I saw all this data. I know what the potential is of that.

So I responded back by saying: No, we're both right. You're right. The loose fill, the loose material, does represent an opportunity for exposure, but the monocote product doesn't. It's important to know the difference between the two.

I had several people respond to that by thanking me and saying that they finally understood the difference and that they agreed with me. I had several people e-mail back to me and say: Thank

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you for explaining this. You're right and we're glad to at least have somebody who worked at W.R. Grace finally speak up about it.

The St. Louis Post-Dispatch was working on an article about vermiculite at the time. They read this. The author of that called me and said: Can I quote you? And I said: Yes. You may quote me as long as you make it very clear that you use my exact words. I want you putting quotes around my words. I don't want you rewriting it. And that's what he did. Because I wanted to be clear that there was a specific event that has to occur here and that it's a short duration, but it's a high level.

Q. Let me show you what has been marked as Hamilton Exhibit 24 and ask if you can identify that document.

A. Yes. This is the St. Louis Post-Dispatch article about zonolite attic insulation.

Q. And is that dated February 24, 2002?

A. Well, I don't see a date on it, but maybe that's because the --

Q. The upper left side.

A. There it is. Yes, it is. It's dated

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Sunday, February 24th, 2002. Sorry.
Q. And let me draw your attention to Page 4.
A. Yes.
Q. And is that your quote in the middle of the page?
A. It says: "Anyone who is involved with Libby vermiculite that is in the loose form should take great care to ensure that they do not expose themselves to the dust from this material. It will release high levels of tremolite on a short-term basis. I have measured this exposure potential on several occasions, and it is real."
That is my exact quote.
Q. And were you contacted by someone at Grace following publication of this article?
A. Yes. I was contacted by Attorney Sparks. I believe he's in Delaware.
Q. And what did Mr. Sparks say?
A. I believe the conversation was he asked me if I had said that, was that truly my quote, and I said: Yes, it was me and I said that, and I did give permission to the author of this to quote me, and he then said that the official Grace position was that zonolite attic insulation doesn't

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represent an exposure problem, and I said: Well, I disagree.
Then he said that if I wanted to talk about it or I had any questions or if there was any issues that involved W.R. Grace, that I could call him, and he gave me his phone number. It was a very cordial conversation.
Q. Mr. Hamilton, are you here testifying voluntarily?
A. Yes, I am.
Q. And why are you here today?
A. Well, I think that after all the years of working at Grace and working on this product and now knowing that it's out there, I felt very strongly that it was important for somebody to come forward as I have to talk about this issue and to render opinions about what it means.
After talking to you about the Science trial that's going on, I clearly am at odds with W.R. Grace about this product.
You have to understand there are thousands of products manufactured by W.R. Grace. This is the only one I really took issue with. I feel very strongly that this material represents an unnecessary exposure to people and to children,

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and somebody has got to say that.
Now, if it's somebody from -- a former Grace employee and so forth, maybe there will be other Grace employees that feel that way also. But you have to understand that I was in a position in the Health and Safety Department -- I was in a position to study the effects and understand the health effects of asbestos exposure. I was doing lung function tests on people who could barely breathe. You know, after you do 100 lung function tests on people who cannot blow into the machine because they have a lung disease, you say: Wait a minute. This material is a problem.
A lot of the people I gave lung function tests to in Libby died prematurely from asbestosis or from cancer, and I was in charge of doing their lung function tests for years. Years and years I went to the plant -- I was a certified pulmonary technician. I met these people. They weren't personal friends, but they were names to me and faces. And I felt as though if the manufacturer of the product can create an exposure potential, that we control bag houses and we're very cautious about what we're doing, and yet this product is then put out on the market and there is

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not even a label on it warning people about it. Somebody has to come forward and say: Enough.
Does nobody have a conscience about this? Well, I do, and that's why I'm here today. I'm not being paid to be here except for my expenses, and I felt it was important for me -- at least somebody to come forward and say for the first time: Enough. It's time to let the world know about this material. It's time to let people know that if it's in their attic, for goodness sake, just be careful about it; and if you want to remove it, this is how you do it safely.
MR. TURKEWITZ: Thank you, Mr. Hamilton.
EXAMINATION
BY MR. RESTIVO:
Q. Mr. Hamilton, it's been quite some time since I introduced myself. Five hours ago. I'm Jim Restivo. I represent W.R. Grace. I'm going to go back to the beginning of your testimony, but let me start at the end first since it's fresh in my mind.
Is it your testimony that monocote 4 or monocote 5 was sprayed as fireproofing in the World Trade Center?

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A. No, I don't think it was. I think it was monocote 3 because this was prior to '71. I don't think 4 or 5 was sprayed there, but I believe there was one building that went up to about the 45th or 49th floor with one form of monocote, and the rest of that building and the other one was sprayed with another type of material. But what I wanted to make sure was that when people were talking about the monocote that was sprayed in that building -- this was prior to '71. I don't think 4 and 5 were invented at that time.

It's important to understand that the asbestos issue was not a tremolite asbestos issue with monocote. I don't believe that monocote products represent a tremolite exposure, and that's what I was trying to say to people.

Q. Do you remember the deposition you gave you referred to -- towards the end of your direct testimony -- it was in a case called Greenville County School District.

A. I knew that it was in South Carolina. I don't recall that it was Greenville. It could be. I just don't recall the name of it. It was quite a long time ago.

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Q. Do you remember your testimony was in December of 1983?

A. It could very well have been, yes.

Q. Do you remember that one of the difficulties you ran into after your testimony was the fact that you testified that with respect to the testing you had done for Grace, the air sampling method was not specific to asbestos?

A. No, I don't recall that.

Q. The testing method which you utilized at Grace, was that the NIOSH testing method?

A. Are you talking about what -- what testing are you talking about? I tested there for 13 years, so you have to be specific.

Q. With respect to the 13 years of tests that you did, were those tests evaluated by phase and contrast microscopy, also known as PCM?

A. For the most part the samples we collected were collected using phase contrast microscopy. Correct.

Q. Isn't it true that at the time of your deposition in 1983 in the Greenville County School District case, December of 1983, at that time you hadn't seen while at Grace any electron microscopy results? Isn't that true?

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A. I had not seen it. That's correct.

Q. And am I correct that independent of what you may have said at your deposition that phase contrast microscope or PCM in fact is not specific to asbestos?

A. Phase contrast microscopy is specific to fibers.

Q. Isn't it correct, sir, that PCM air monitoring is not specific to asbestos?

A. Yes.

Q. Does that refresh your recollection that you gave that answer at your deposition?

A. No.

Q. But that's something you knew --

A. Do you want me to read that first to refresh my memory? I would be more than happy to. I'll take the time to do it.

Q. It's not necessary.

You knew that fact during the years you worked at W.R. Grace in the position you discussed?

A. Well, everybody knew that the reason that we were doing phase contrast microscopy was to look at tremolite, which was a form of asbestos. We also knew that the method was capable of counting fibers that met the definition of a fiber

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that was not asbestos.

Q. Mr. Hamilton --

A. To answer your question, I knew that the whole time I was there.

Q. Mr. Hamilton, I understand your testimony.

Did you understand that when the PCM method counted fibers, it assumed the fibers were asbestos, but PCM did not distinguish between asbestos fibers and other fibers?

A. Yes.

Q. Now, you indicated why you are testifying today, and I understand your testimony to be you're not receiving any compensation for testifying here.

A. No, I am not.

Q. All you're receiving is reimbursement of expenses?

A. That's correct.

Q. And what are those?

A. My travel expenses, which includes the hotel, the airline and transportation.

Q. I was under the impression, Mr. Hamilton -- and I could be wrong -- that the reason your deposition was taking place in South

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Carolina is that you are here for some other reason. Maybe I misunderstood.
A. No. It was a matter of convenience for me, and I appreciate your being here today. I remember talking to you saying I really would like to do it today rather than push it into March because it was very easy for me to change my travel plans to come through South Carolina to be here today to give this deposition. So when we first talked about it I said: Gee, I would really like to do it in South Carolina because it's convenient. Otherwise we would have to do it in downtown Boston, which to me is inconvenient.
Q. And what did you do in preparation for your testimony today?
A. In preparation for the testimony I reviewed all of these documents that were shown as exhibits.
Q. Where did you do that and where did you get them?
A. I received them by courier from Mr. Turkewitz last week before I went on vacation, and I reviewed them while in flight. I've been going through the documents refreshing my memory about the work that we had done. I had never seen

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the Post-Dispatch article previously to this, so it was interesting to see that. That's where I received them from.
Q. Did you then meet with either Mr. Turkewitz or Mr. Westbrook to discuss your testimony today?
A. Yes. I met with Mr. Turkewitz to discuss my testimony today.
Q. And when did you do that?
A. Last night and this morning, for about an hour and a half this morning prior to coming in here.
Q. Did you discuss any documents which have not been marked as exhibits today?
A. If we did, I don't recall them. I can't think of any documents that we really discussed. I mean, we did discuss my deposition in the Greenville case briefly. We did discuss a document that isn't in here involving a testing of product, but it wasn't zonolite attic insulation, so therefore it wasn't brought out, but we did discuss it. And another document that I had produced while I was at Grace, but it didn't involve ZAI, so that may be why it's not in this list.

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Q. Did you discuss any documents in which you wrote about the subject matter of a label ZAI?
A. Yes. We did discuss a document that I wrote to the Canadian operations in response to a request for information about labels.
Q. Was that a document that Mr. Turkewitz had sent you by courier last week?
A. No.
Q. That was a document you saw last night or this morning?
A. That's correct.
Q. Was that document one of the exhibits introduced today?
A. No.
Q. And what did you tell Mr. Turkewitz about that document when he showed it to you?
A. If we're discussing the document that I wrote about the label or that I wrote to the Canadian operations, I discussed with him the context of that document, what was going on, what was the question being asked, and why was I responding the way I did.
Q. And looking at, for example, Exhibit 22 --
A. Yes.

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Q. Do you remember you told us a little bit on the record about what Exhibit 22 said?
A. Yes.
Q. Do you recall that testimony?
A. Yes, I do.
Q. Prior to receiving this in a package from Mr. Turkewitz do you recall ever seeing Exhibit 22 at or about August 15, 1984?
A. This exhibit was not sent to me by Mr. Turkewitz. I saw this this morning for the first time, and I do not recall seeing this in August of 1984.
Q. Do you recall seeing it between August 15, 1984, and this morning when you saw it?
A. No, I do not.
Q. And so you were reading what it said, but you really have no personal knowledge of having received this document, no personal recollection of having received this document at the time?
A. That's correct.
Q. Now, you also saw some test results that you talked about; correct?
A. In the exhibits here. Correct. Yes.
Q. Have you seen any of them since the time you left Grace and the time Mr. Turkewitz sent

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them to you?
A. No.
Q. And do you recall if you recently before seeing the documents expressed the view that in your initial test what you poured was a single bag of attic insulation?
A. Yes. I thought it was a single bag when I originally started thinking about it again, and then I realized that we had done more than that. There was some moving around of the material.
Then when I got these materials from Mr. Turkewitz and started reading it it refreshed my memory, and I remember that it wasn't just one bag, it was more, and that the information that I was trying to remember started coming back to me a little better, and frankly I took some pretty good notes so that I could refresh my memory a little bit better.
Originally for some reason I was thinking it was only one bag, but it actually was, as I was thinking about it, ten bags.
Q. And staying on that situation for a moment, I think you testified this morning that your recollection was that the room in which you

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did that test with Mr. Venuti was about this size, I thought you testified.
A. If you would like, we can look at the exact dimensions.
Q. I'm going to do that a moment. My question is --
A. But I remember it being a closed-in room. This is probably bigger, but it seems to me that the room and height are similiar; but you know, it's 25 years ago. Frankly, I didn't put the size of the room on my notes, so whether or not it's exactly the size of this room or not doesn't -- well, frankly, I think having the notes in there really helps to understand the size of the room. It's difficult for me to say: Well, 25 years later I stood in a room for one day and was -- it was a room that was closed. This is a closed room. This looks a little bit longer than what I recall, maybe a little wider and taller, but the room that we actually did the work in, I have the dimensions in here. So it's pretty easy to refresh my memory on that and say: Yes. The room was 8 X 12 with an 8-foot ceiling.
Q. The reason I asked you that, Mr. Hamilton, at lunchtime I tried to pace this

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room off because this looked bigger to me than your notes, at least by my pacing, unscientific.
A. Is the size of the room all that important? We're talking about people's health here and we're talking about the size of this room and whether or not you paced it off?
Q. Would you agree --
A. This is getting off the subject, isn't it? Can we just stay on the subject?
Q. My question, sir, is what was the size of the room --
A. The room was 8 X 9 X 12. I wrote it in my notes.
Q. 8 X 12 X 8?
A. Okay. Let's go right to the page.
I'm sorry. It was 8 X 12 X 8. That's a small room. That room is a little bit smaller than my recollection of it.
Q. Do you recall any other documents you may have seen other than the two we've identified that were not marked today as exhibits?
A. We did look at a document involving a person who had a rather minor exposure period of -- had worked for Grace for, I think, two summers and had died rather suddenly 50 years later of lung

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disease. I do recall seeing that document.
Q. What was that person's name?
A. I don't think we discussed his name. All I read was the headline.
Q. And what did the headline say?
A. The headline talked about the -- it dealt something along the lines of a death caused by a rather low level or small exposure time period of a person who had died from lung disease.
Q. Would it be correct for me to assume other than seeing that headline you had no personal knowledge or involvement in whatever that situation was?
A. That's correct.
Q. And how long did you meet yesterday with Mr. Turkewitz?
A. Well, we met at approximately 5 o'clock and we completed our business at about a little after 1 o'clock in the morning.
Q. Did he ask you and rehearse with you the questions he asked you today?
A. Yes, he did.
Q. Did you have any discussion with him about transmission electron microscopy or TEM? Did that come up in your discussions?

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A. The TEM came up only to the extent that it really wasn't very popular. It wasn't a method that was done much for asbestos in the mid '70s, but later TEM was used to look at samples on a more frequent basis, and today it's used regularly.
That's about it.
Q. As a certified industrial hygienist do you know whether TEM is specific in identifying asbestos fibers in air sampling?
A. Yes; it is specific to asbestos fibers.
Q. You indicated a number of names in your testimony, and I think you made reference to Fred Eaton, did you not?
A. Yes, I did.
Q. What was his job during the period of time you were requesting technical service on various tests?
A. Fred Eaton worked for the Construction Products Division engineering group. He was involved with projects with the plant construction, and during this time that I began to become familiar with his work he was requested or his job was reassigned to work on product evaluations. Specifically he was on the -- his product that he was evaluating was zonolite attic insulation.

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Q. Isn't it true, Mr. Hamilton, that with respect to that evaluation Mr. Eaton, using whatever resources he had, designed various tests that you talked about today?
A. I don't know whether Fred designed them or not.
Q. You know you didn't design them?
A. I did not design them.
Q. And do you know whether Mr. Eaton had any goals he was trying to accomplish through the use of these tests?
A. I know that he had goals, but I don't know specifically what was outlined and assigned. I don't know specifically the work, but nobody spent money at W.R. Grace without a goal.
Q. Whatever those goals were, those weren't goals that he reached in consultation or with your approval or involvement?
A. That's correct.
Q. Whatever testing and whatever work he was working on, he was doing, but you were involved in that you made the request for technical service and in that you got certain reports and in that you may have commented on certain reports, but you didn't design the programs?

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A. That's correct.
Q. And you would agree with me that just based upon the exhibits you've talked about today there was an awful lot of things written down about tremolite and about Libby and about the testing of those things; isn't that correct?
A. There is a lot of documentation, yes, here about the testing and the vermiculite and Fred's notes on that, yes.
Q. And with respect to your principle function during the period of time you were employed, you issued and received many, many documents dealing with air tests in the plant environment; isn't that correct?
A. Yes.
Q. Plants all over the country; isn't that correct?
A. Yes.
Q. On a fairly regular basis; isn't that correct?
A. Yes.
Q. And those plants would report with respect to Libby or air quality readings at certain times and during certain functions in certain plants; isn't that correct?

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A. Yes.
Q. And you would report back to the plants what you found; isn't that correct?
A. Yes.
Q. And all of that was written down on pieces of paper; isn't that correct?
A. There was -- I think what you're referring to is that we had a paper trail for every air sample we collected. It was written down. There were reports issued for every sample set that we collected, and there was a paper trail on all of that. Correct.
Q. Now, on some of the reports you testified about there were a number of names that appear, one of which is Mr. Eaton. You've talked about on occasion Mr. Eschenbach. I think you mentioned Mr. Duecker.
Am I saying that right?
A. Yes.
Q. You mentioned Mr. Wolter.
I'm not sure you mentioned and so I'm going to ask you: What was the involvement of E.S. Wood whose name appears as getting copies of at least some of these reports?
A. I never had any dealings with Chip

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Wood. Whenever he dealt with anybody in our department, he talked directly to Harry Eschenbach. I had the feeling he didn't know what my name was.

Q. Did that upset you?

A. No. He was a very busy man. He had a lot on his mind, and I could appreciate the fact that he didn't really have a lot to talk to me about. He was busy managing CPD, and whether he knew me didn't really matter. He was a very busy man and I didn't want to bother him.

Q. Did you ever see any results of tests Mr. Wood reported on with respect to testing of the application of ZAI in actual homes?

A. I did see Mr. Turkewitz – Mr. Turkewitz did show me a document that I believe was a response by Mr. Wood to – it may have been the EPA or Consumer Products Safety Group, which I'm kind of drawing a blank on that, but I know that it was a document he wrote talking about ZAI and potential exposure to it.

Q. Had you seen that document prior to the time Mr. Turkewitz showed it to you?

A. No; I had not seen that document. In fact, I didn't read it. I only read little excerpts from it.

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Q. Mr. Hamilton, I want you to think as hard as you can because now we've identified three documents that you saw that were not marked as exhibits.

Can you think of any other pieces of paper you were shown in preparation for your deposition other than the three documents we've now identified that were not marked as exhibits?

A. You have to understand that all three of those documents were looked at just briefly. We probably spent less than one or two minutes on them. I really can't think of any other document -- a lot of this wasn't germane to what I was going to be reporting on or talking about today. It was more along the lines: Did you know this document existed or did you see this article? They weren't involved with what I was going to be talking about, so I didn't spend a lot of time studying them or thinking about them.

I really can't think of any other document that I looked at that had any importance to this case. Mr. Wood's document to me isn't important for today's work.

Q. Mr. Hamilton, I'm not trying to –

A. So I can't remember, really. There may

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have been another document there. I just don't recall.

Q. I don't know whether the documents are important or not important, significant or insignificant. I am entitled to know what documents you might have looked at in preparation for your deposition to the extent you can remember.

A. I'm going to answer your question: I did not use those documents that we talked about in preparation for my testimony today.

Q. I will now ask you: Do you remember other than the three documents that we've talked about seeing any other pieces of paper other than the exhibits marked so far at your deposition today?

A. No; I don't recall any others.

Q. Now, you talked on direct a little bit about how asbestos fibers get into the lungs.

Can I assume that you don't hold yourself out as a medical doctor; that is simply information you have acquired as part of being a certified industrial hygienist? You're not passing yourself off as an expert on the causation of asbestos fibers in the body?

A. I don't know what you mean by the

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"causation of asbestos fibers in the body". I think you're going to have to restate that for me, where you're going with that.

Q. You talked about what size asbestos particles in order to get this, in your terms, to the lowest part of the lung, did you not?

A. That's correct.

Q. How do you know that?

A. I read that.

Q. You're not an expert in those medical processes? You're not Board certified as a physician, as a thoracic surgeon, or anything like that? You read it somewhere; correct?

A. That's correct.

Q. Would it be fair to say, Mr. Hamilton, after your review of these documents that what Mr. Eaton was attempting to do in this instance was to test different formulations and different grades to see what results he would get in various types of tests?

A. Yes.

Q. And would it be fair to say that Mr. Eaton was doing that, given what you know about Grace, for some purpose – we'll call it at least some goal.

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A. Yes.
Q. And that's why sometimes you see in the test Libby No. 1, sometimes Libby No. 2, sometimes Libby No. 3, sometimes with a binder, sometimes without, sometimes screened, sometimes without.
He was looking at all various permutations, was he not, in these tests?
A. That's correct.
Q. You mentioned Bob Locke being in charge of product testing.
A. Yes.
Q. Have you talked to Mr. Locke about these subject matters since you left W.R. Grace?
A. No.
Q. Did you contact Mr. Turkewitz or did he contact you in order that you would be available to give testimony for the reasons you've discussed?
A. He contacted me.
Q. And when did that contact occur, approximately?
A. A couple of weeks ago.
Q. In February or in January? If you know.
A. I think it was in February.
Q. You ordered testing of various air

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sampling done, both in terms of the exhibits before you today and also in terms of environmental plant testing; is that correct?
A. I directed testing of employee exposure in the manufacturing plant. I also conducted personal testing of end use application of products on several occasions.
Q. My question was: In connection with that testing you had air sampling done; correct?
A. Yes.
Q. You yourself did not evaluate the air sample equipment, the filters, the counting of the fibers? That you requested someone else to do?
A. The air sampling pumps belong to my group, Health and Safety, so when Fred Eaton wanted air sampling pumps, he would come to me and borrow my pumps.
The rest of your question is yes; I requested other people evaluate air samples.
Q. Turn if you would, Mr. Hamilton, to Deposition Exhibit 1.
A. Yes.
Q. Isn't that a Request for Technical Service?
A. Correct.

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Q. That's what these documents are called? Yes or no.
A. Yes.
Q. And with respect to this document, you're not requesting that air sampling be done because that has been done. What you are requesting is that the air samples that have been collected be analyzed. Isn't that what these documents do?
A. That's correct.
Q. And that analysis wasn't done by you or people reporting to you; that was done by some other department?
A. That's correct.
Q. And do you know how they went about their business of preparing the air samples you had collected for analysis?
A. I think if you're referring to the procedure for the evaluation of the samples –
Q. Yes.
A. Yes.
Q. You have a general understanding of how that works?
A. Oh, yes.
Q. And are you familiar with the term

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"direct preparation" of the sample results?
A. If you mean direct preparation of the sample results and direct preparation of this document –
Q. Yes.
A. I'm familiar with the fact that the document was prepared by Julie Yang, by people in her department.
Q. As a certified industrial hygienist are you familiar with the difference in what is known as direct preparation of air sample results and indirect preparation of air sample results?
I'm not suggesting by the question you should be aware, but I want to know if you're aware.
A. I think I understand the concept of direct preparation versus indirect, but I wasn't directly preparing the samples, which is done by others. So that would be an indirect preparation, if that's what you're driving at.
Q. I think you testified at 11:05 this morning that it was your understanding that zonolite attic insulation in general used the larger sizes, mainly No. 1, sometimes Libby No. 2 and occasionally Libby No. 3; is that correct?

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A. It was along that line, that the zonolite attic insulation product could be Libby 1, 2 or 3. That's what I saw in the expanding plants, and that's what was being tested here. I think that's what I testified to. That's what I meant. One of those three products could be labeled as zonolite attic insulation.

Q. Mr. Hamilton, do you have any understanding as a result of your years of experience taking tests and looking at tests in the expanding plants whether ZAI was composed mainly of Libby No. 1, sometimes of Libby No. 2, and on occasion Libby No. 3, or are you saying all three grades to your knowledge were used equally?

A. I'm going to say it my way.

I know that all three of those grades were tested; that all three grades were called zonolite attic insulation, and they clearly were testing those three grades. That's what I understood would be used for ZAI, and whether or not one was used more than the other, I do not know.

MR. TURKEWITZ: Why don't we take a break right now.

(Discussion off the record.)

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THE VIDEOTAPE SPECIALIST: Off the record.

(Short recess taken.)

THE VIDEOTAPE SPECIALIST: Back on the record. The time is approximately 3:34. This is Tape No. 3 of the videotape deposition of Thomas Edgar Hamilton.

BY MR. RESTIVO:

Q. Mr. Hamilton, if you would look at Hamilton Deposition Exhibit 1. This is a January 31, 1977, Request for Technical Services dealing with samples from Weedsport; is that correct?

A. Yes.

Q. And Mr. Eaton's name appears as getting copies of the report as well as some other people?

A. That's correct.

Q. And in the summary section in the second page of the exhibit there is a reference to more than two fibers per cc. Do you see that?

A. Yes.

Q. Was that the standard at the time, do you know?

A. Yes.

Q. And was that an OSHA standard or just a

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recommended threshold limit standard or what?

A. I believe that was the OSHA permissible exposure limit at the time.

Q. And was that, if you know -- strike that.

Do you know whether that standard was an eight-hour time weighted standard?

A. Yes, it was.

Q. And do you know whether or not in 1977 there was also an excursion -- I think you made mention to an excursion limit or excursion standard.

A. I don't recall that.

Q. You don't recall if there was one --

A. I don't recall if there was one. It's been too long. I would have to refresh my memory on that.

Q. There is today, I thought you testified, an excursion limit.

A. One fiber per cc, yes.

Q. And is there any time frame for that limit?

A. I think the minimum sampling time is 15 minutes for a sample. So essentially you could apply a 15-minute limit to that, because if you

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have to sample every 15 minutes, you have to measure that level.

Q. Does that mean that the excursion limit is stated in terms of one cannot be exposed above this limit for 15 minutes or more?

A. No. I think the excursion limit is essentially a limit that should not be exceeded.

Q. Even for one minute?

A. Even for one minute. But in order to measure it, you have to measure it over a 15-minute period.

Q. And that's your understanding of the current -- what did we call it?

A. OSHA standard on asbestos.

Q. OSHA standard on asbestos.

Now, turning, sir, if you would, to the Air Sampling Record Sheet, the second page of that, if you would, there is a reference towards the bottom of the second page to "initial background".

Do you see that?

A. Yes.

Q. Can you tell me what that means, what they were doing there.

A. Yes. They collected an air sample before they started the drop test.

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Q. And can you help me by telling me what time, you know, in lay people's time they did the initial -- they started taking the initial background sample.
A. It says 1503, which would be a little after 3 o'clock, until 3:33. So it's a 30-minute sample.
Q. That would be in the afternoon?
A. Correct.
Q. And what is the next entry?
A. The next entry is the final background, and that's from 6:40 to 6:52, it looks like.
Q. And there is an asterisk -- can you tell what that says? "Started" --
A. "Started back on sample after cleanup. Running short of time."
Q. Now, can you tell looking at the times on the various tests when the last drop test was completed?
A. It looks like it was completed at 1824.
Q. Which would be 6:24?
A. Correct.
Q. And it looks like, if I'm reading this right, they do a final background sample at 6:40.
A. Correct.

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Q. Finishing it at 6:52.
A. That's correct.
Q. So they began the last background sample 16 minutes after the end of the last drop test at 6:24?
A. Correct.
Q. And the report shows what fibers were found in the air during the drop test, does it not?
A. Yes.
Q. And it also shows what fibers were found when they did a background check after the last drop test; is that correct?
A. That's correct.
Q. Would you agree with me that the fibers in the air in the final background test are a small percentage of the fibers in the air during the actual drop test?
A. That's correct.
Q. Namely, 0.21 fibers per cc?
A. That's correct.
Q. And the final background of this test at least which lists the initial background before they started, 0.71 fibers per cc; is that correct?
A. That's correct.
Q. And am I correct that whatever these

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numbers represent, it's your understanding they don't represent eight-hour time weighted results?
A. That's correct.
Q. Now I want to turn to your first involvement and your first test.
Was that a test, if you know, set up by Mr. Locke?
A. Yes.
Q. And you did that along with Steve Venuti?
A. Correct.
Q. And you used ten bags of Libby No. 12 attic insulation; correct?
A. That's what I put down here. That's what we used, ten bags.
Q. And you spread those bags in an 8 X 12 room with an 8-foot ceiling?
A. That's correct.
Q. And how long did it take you and Mr. Venuti to spread those ten bags?
A. 14 minutes.
Q. And you're answering me 14 minutes to spread the ten bags because you are adding up eight minutes in CAM 1 sample and 6 minutes in the CAM 3 sample; is that correct?

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A. That's correct.
Q. I'm talking about the dry material. I should have made that clear to you, but you've answered consistent with my questions.
Now, isn't it correct, Mr. Hamilton, that what the report shows is how long the pump was on unnecessarily how long Venuti was spreading vermiculite?
A. That's correct.
Q. Your knowledge of the test and your involvement allows you to testify that the pump that was on for eight minutes was on for eight minutes of spreading vermiculite because you were there and that's what was done; correct?
A. That's correct.
Q. The document itself doesn't necessarily spell that out, but if you were there you know that's what happened?
A. Correct.
Q. All the document tells you is how long the pump was on.
And generally in these reports that you got that you weren't involved in, would you read them the same way; that is, would you equate the sampling time with whatever the operation area is

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in that part of your form?
A. The sampling time represents the period of time that the pump ran. The job that is described there, the operation of the area, may or may not have run exactly in conjunction with the time that the pump ran. There may be some start and stop time in which they weren't pouring or weren't spreading but would be recorded as sampling time.
Q. But for this test which you were present at in Hamilton Deposition Exhibit 2 your recollection is that in fact Venuti was spreading vermiculite for approximately eight minutes and six minutes for a total of 14 minutes?
A. Yes. As I recall, we didn't delay between his completion of the spreading and shutting off the pump and putting a new filter on and starting up again. There wasn't a lot of delay. That eight minutes and that six minutes represents pretty much the time of the spread.
Q. And I think you'll agree with me that these test results are reflected in phase contrast microscopy terms; correct?
A. That's correct.
Q. And so am I correct that over -- when

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you get to lab evaluation and a number of fibers per cc, all fibers are counted as if they are asbestos, but in fact PCM doesn't identify them as asbestos or nonasbestos?
A. I believe you're correct on that. I'm not sure if these were counted using discriminatory counting technique that you would need to put in place. I don't know exactly when she started that. But if this was discriminatory counting, then these samples would reflect more closely the fiber that would be associated with tremolite rather than particles that were not tremolite that appeared as fibers.
I'm not sure when she started the discriminatory counting technique, so I can't answer your question.
Q. Was it at the front end of your involvement in these sorts of tests or more towards the tail end of your involvement that you believe Julie Yang dealt with discriminatory counting?
A. I think discriminatory counting occurred rather early on this time. So I'm not quite sure if she had already started doing that or not because I was already -- we were already doing a lot of monitoring in the expander plants, and I

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think she may have started using the discriminatory counting technique prior to this time. These may be -- these may have been counted using the discriminatory technique, in which case they would more accurately reflect fiber rather than fiber and tremolite -- I mean vermiculite on end. It appears to be fiber, but it really isn't.
Q. It would be fair to say, Mr. Hamilton, looking at Hamilton Deposition Exhibit 2 you and I can't tell whether the fiber numbers marked under "Lab Evaluation" are tremolite asbestos fibers or not?
A. That's correct.
Q. Would you agree with me that whatever those fibers are, they are not expressed in terms of an 8-hour time weighted average?
A. That is correct.
Q. Would you agree with me that when you reported results back to various plants where air sampling had been taken, you reported those results back on a time weighted average basis?
A. We attempted to do that in nearly every report we could because that was of the appropriate way to report it. Correct.
Q. Do you recall ever advising plants that

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while there may be isolated instances of exposures above the PEL, when averaged out over an 8-hour time weighted average, they were within standard?
A. Yes.
Q. I think I lost the thread of your testimony on Exhibit 2, this No. 28.88, which on Exhibit 3 then shows up as a different number. I'm not sure I understand why that occurs or why you are testifying you think that occurred.
A. I think the question was along the lines of why would this have happened? How come the file copy had a different number from the copy that was sent to Mr. Duecker, and I think that I gave a plausible explanation of why that could have occurred.
The reason was that sometimes when a sample result set has gone out, a quality control check is done on the data. It may have been that after they QC checked this data they found the error, and so they corrected it, and what you have is an uncorrected copy as Exhibit 2 and a corrected copy as Exhibit 3.
I have no other explanation for that that I can think of why it would have been changed.
Q. Mr. Hamilton, don't take my question in